TECHNOLOGY DEPT.

Telephone ENGINEER and MANAGEMENT

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OCTOBER, 1945

Featuring

USITA BOARD OF DIRECTORS MEETING AND ANNUAL COMMITTEE REPORTS

Editorial Index page 10

THE COVER PICTURE—

Fastening an open wire to an insulator at Bingen, Germany, Sgt. Barreteau (N.Y.) of the 40th Signal Battalion is working on one of the largest open-wire construction projects undertaken by a signal unit. The river in the background is the Rhine and demolished German railroad equipment is strewn along the bank. Signal Corps photo.

VOLUME 49, NUMBER 10. Published monthly by Telephone Engineer Publishing Corporation. Office of Publication, Pontiac, Illinois. Executive and Editorial Office, 7720 Sheridan Road, Chicago, Illinois. Subscription: U. S., Cuba, Mexico, $1.50 per year; Canada $2.00, in all other countries, $3.50. Single copies, U.S.A. 15 cents; single copy JANUARY 15 BLUE BOOK BUYER'S GUIDE $1.00. Entered as second class matter at the post office at Pontiac, Illinois, under the act of March 3, 1879.

THE MAGAZINE OF THE TELEPHONE INDUSTRY

TYPES 403 and 405

TYPE 86

TYPE 70

TYPE 26

TYPES 303 and 305

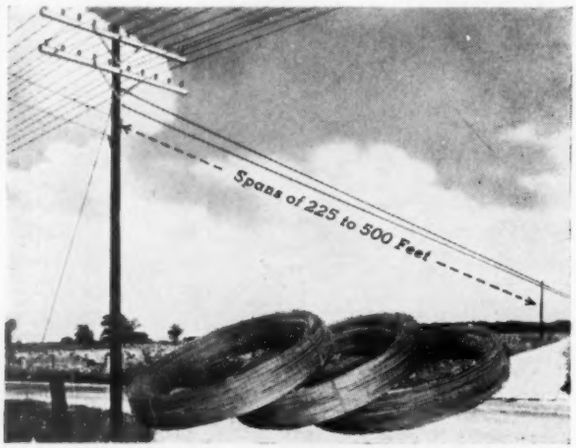
TYPES 333 and 335

LOOK TO LEICH FOR THE RIGHT TELEPHONE FOR EVERY RURAL LINE REQUIREMENT....

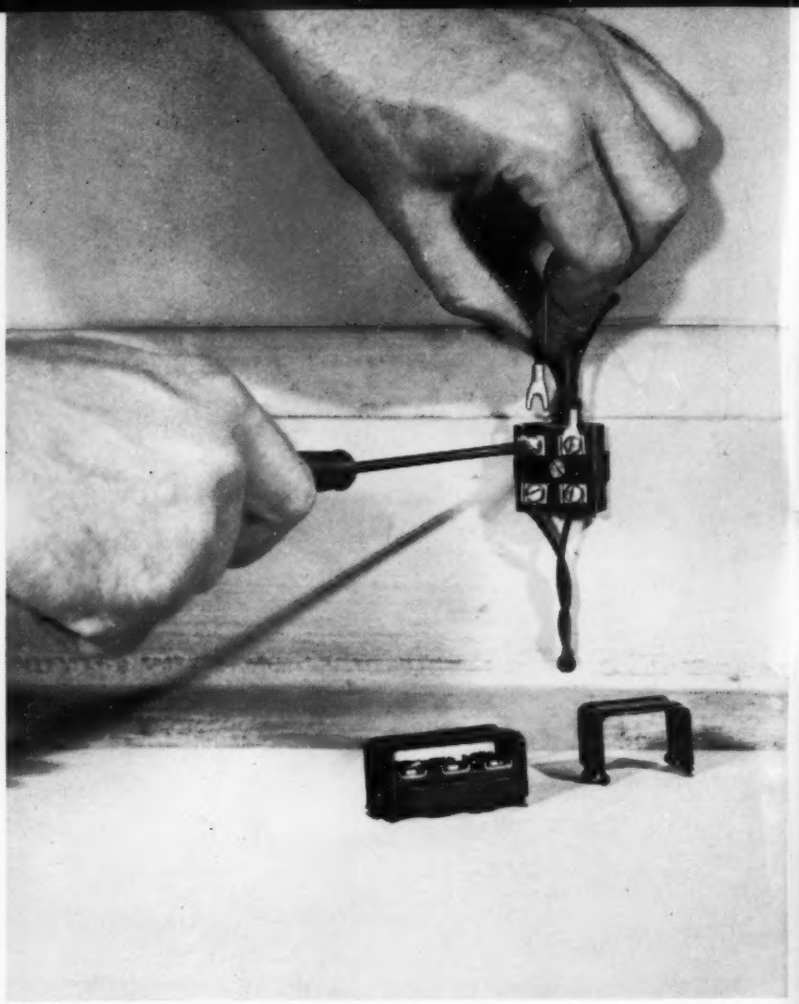
For prices and delivery information on all Leich Telephones, address Leich Sales Corporation, 427 West Randolph Street, Chicago 6, Illinois

LEICH MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907

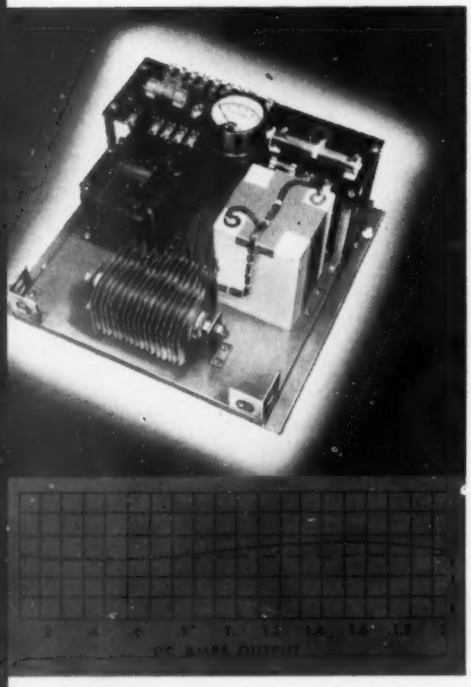
Sealed Against Trouble. Manufacturers of communication equipment insist on Kester Rosin-Core Solder for eliminating high-resistance joints and intermittent open-and-closed circuits. Remember to use KESTER SOLDER CO. Rosin-Core Solder throughout *your* telephone system.



Save Three Ways . . . on materials, man-hours, and maintenance, with INDIANA STEEL & WIRE COMPANY's Crapo HTL-85 and Crapo HTL-135 Line Wire. Galvanized by the famous Crapo Galvanizing Process, it's protected with a heavy, ductile, tightly-adherent coating of zinc.

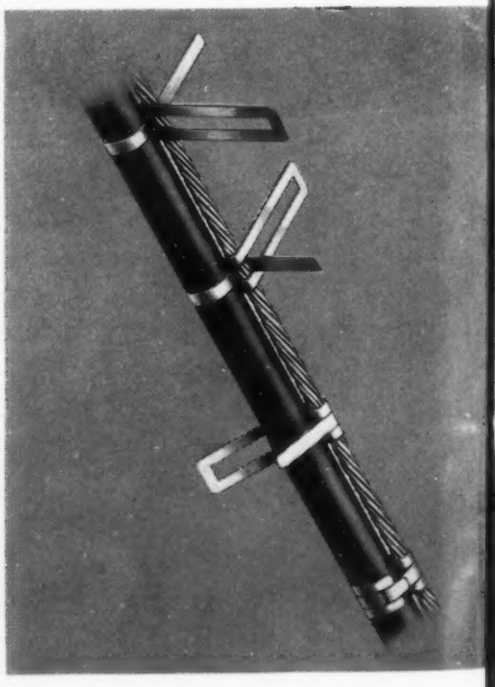


Has All The Answers! Kellogg Connector Blocks have every feature needed to save installation time and assure fool-proof connections. U-shaped gripper plates are made to take spade or spike tips or any size wire. Block is shaped to hold tips in place without lateral movement. Other features: Bakelite base; corrosion-proof brass cover; and they're made in 2 and 3-point sizes.

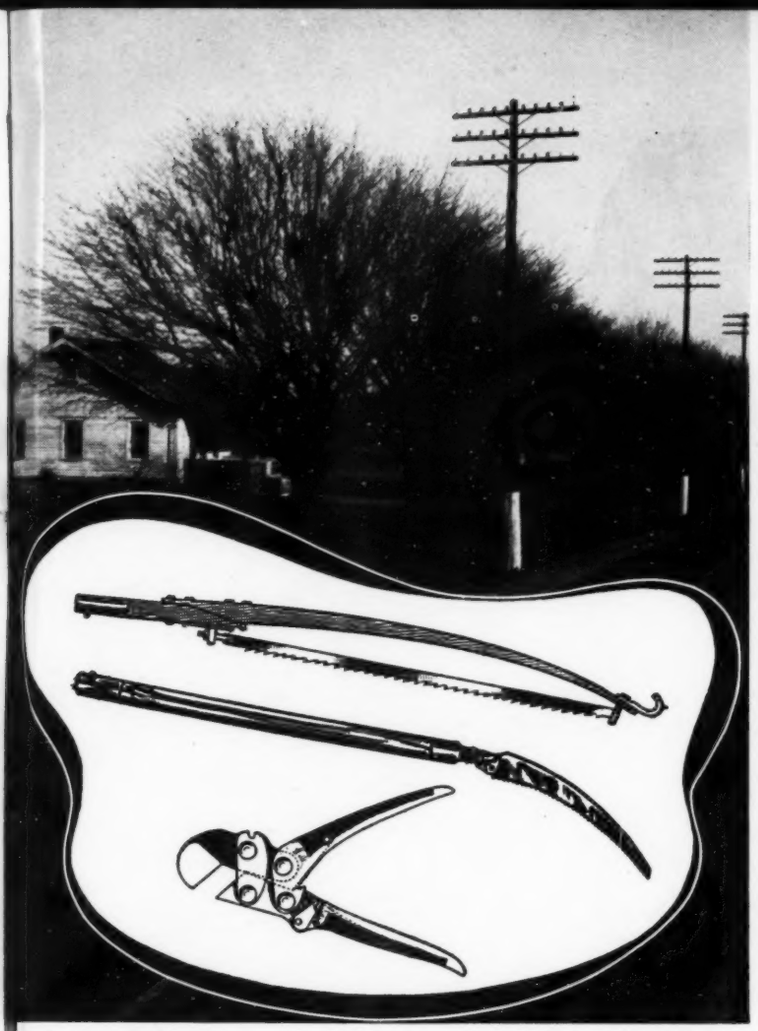


Steady DC Voltage, required by switchboard lamps and telephones (especially dial), can always be assured when you use a RectiFilteR. Made by RAYTHEON MANUFACTURING COMPANY, it operates from regular AC source. And with no moving parts to wear, maintenance is low.

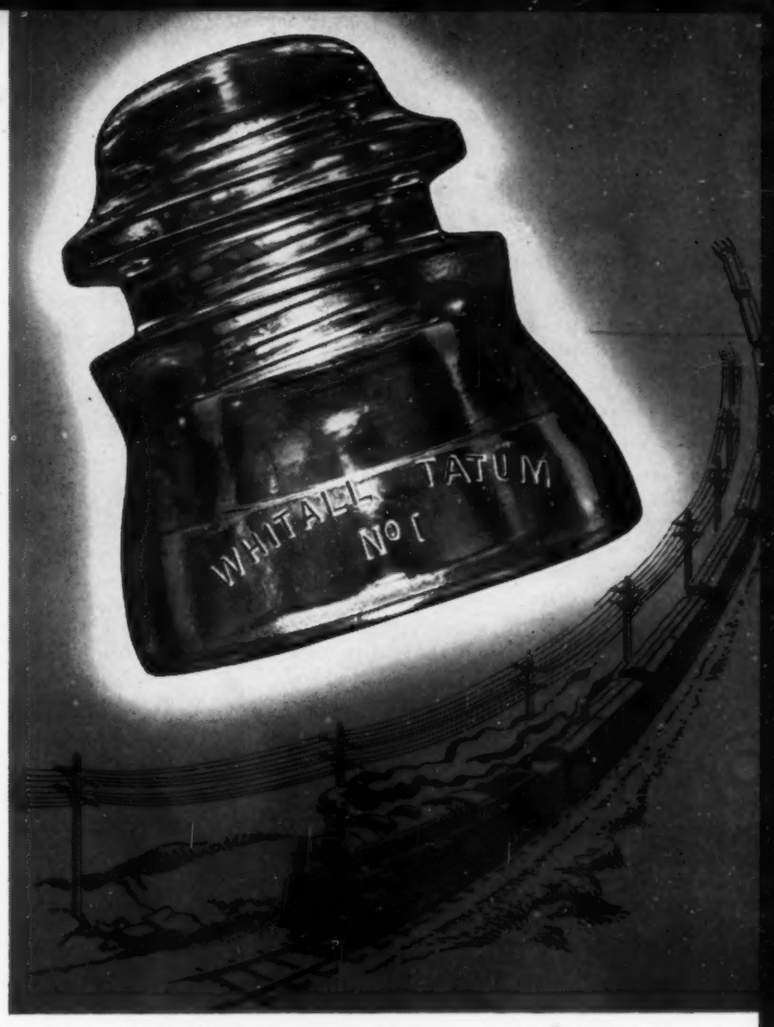
Not a Kink in a Carload. Kellogg Koiled Kords always stay out of the way, and thus they help reduce telephone breakage which is so often caused by dangling cords. The outer rubber cover is permanently molded in a spiral shape, thus assuring constant natural, uniform retractability. An exclusive KELLOGG product.



Easy on Cable. Prevent early cable discard by eliminating sheath cutting, creeping and rusting with Reliable Zinc Cable Hangers. They also provide added protection against lightning—cable is bound and solidly grounded to messenger. Made by RELIABLE ELECTRIC COMPANY.



Fast, Easy Cutting is assured with Newman Cutting Tools. The Pole Tree Saw cuts limbs up to 8" diameter. The Curved Type Tree Saw cuts 2½" limbs with ease. And the Hand Pruner makes full ¾" cuts easily, and permits cutting close to the trunk line. Shipments can be made in two weeks or less on these products made by NEWMAN MANUFACTURING AND SALES CO.



Meet Every Service Need. No matter what your requirement, there is a size and style of Armstrong's Whitall Tatum Insulator to meet it. Made by ARMSTRONG CORK COMPANY, they feature crystal clarity of glass, accurate gaging, and unusual resistance to temperature changes. For lower maintenance costs, Armstrong's Whitall Tatum Insulators are a good bet.

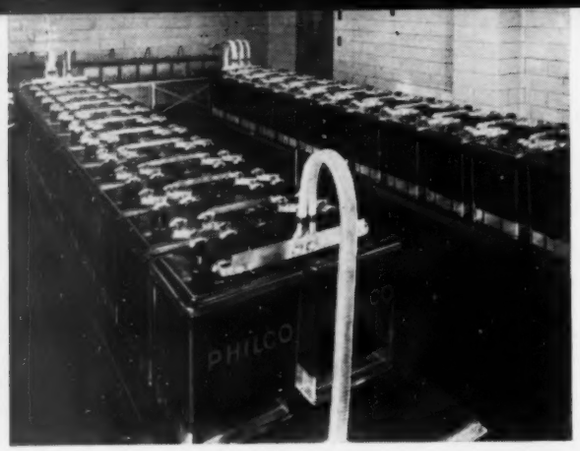
KELLOGG Recommends and Guarantees These Finer Supplies

. . . and that is your assurance that the line supply and construction materials shown here—all products of leading manufacturers—can be relied on for dependable service and lasting satisfaction. Like all line supplies listed and described in the Kellogg catalog, they are backed by the famous Kellogg "double guarantee." This is your best assurance of getting materials that will perform properly over a long period of time. Send your orders to . . .

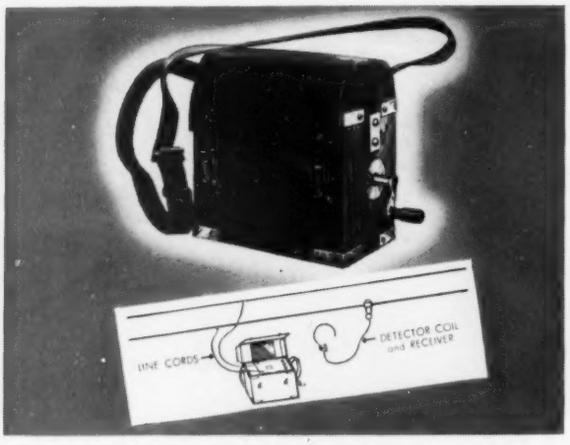
KELLOGG SWITCHBOARD & SUPPLY COMPANY

Factory and General Offices: 6650 South Cicero Avenue, Chicago 38, Illinois
Branch Offices: Kansas City San Francisco St. Paul Los Angeles

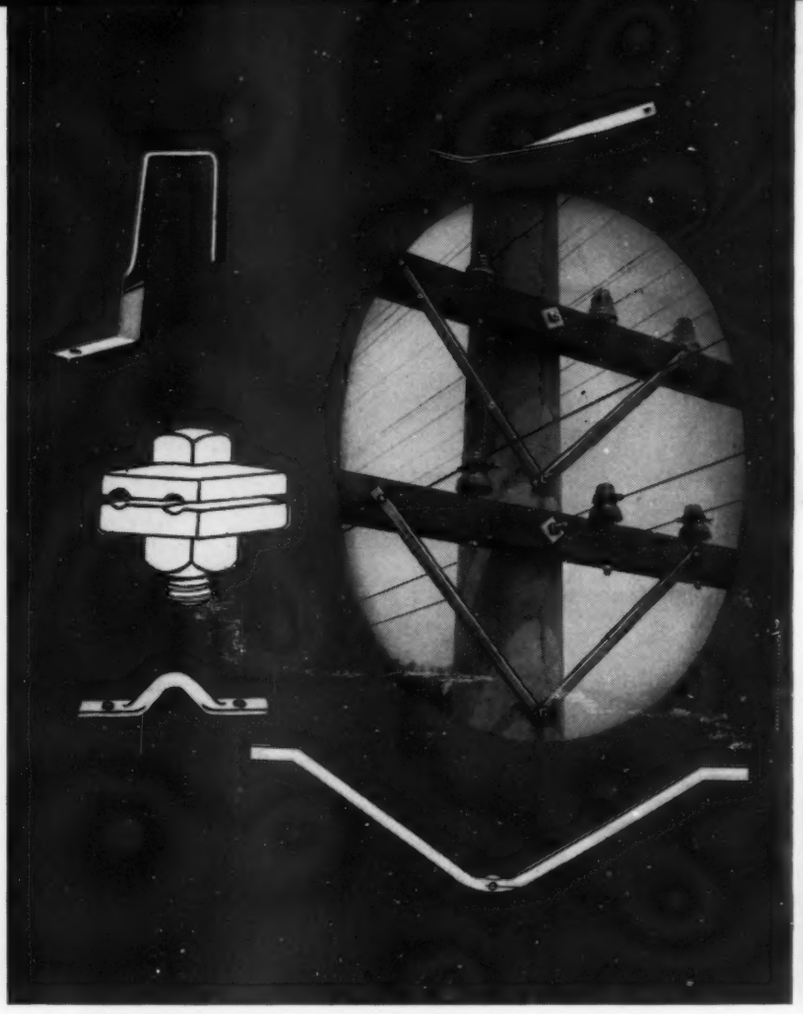
Order Your Line Supplies from KELLOGG



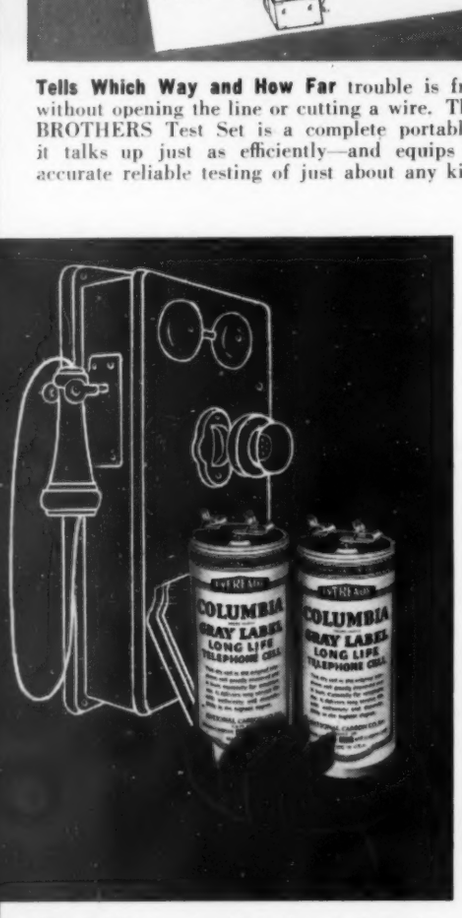
On Guard! With this 48 cell PHILCO Battery installation, the Pennsylvania Telephone Corporation, Johnstown, Pa., maintains an ever-dependable power reserve. The cells shown here are the Philco Type 23FFP, with supported elements, famous Flotè grids, and annealed steel glass jars.



Tells Which Way and How Far trouble is from the tester without opening the line or cutting a wire. The STEWART BROTHERS Test Set is a complete portable telephone—it talks up just as efficiently—and equips you for fast, accurate reliable testing of just about any kind of trouble.

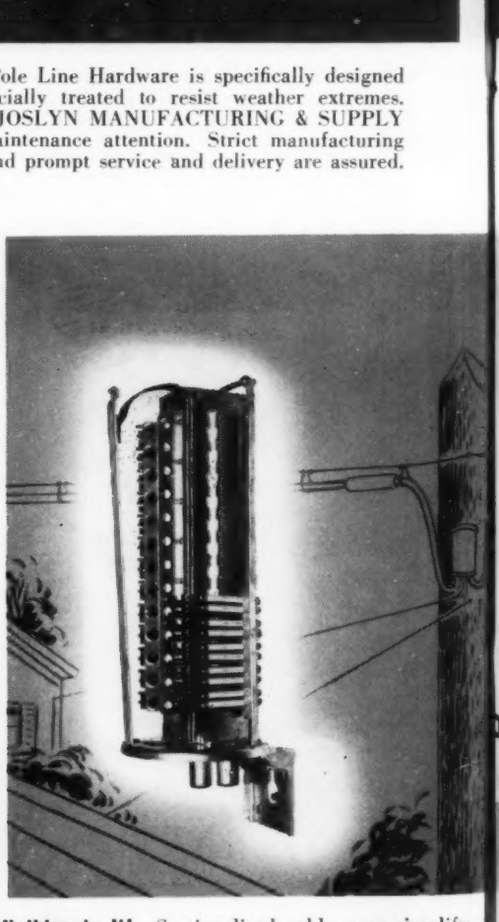


Less Work for Linemen. Joslyn Pole Line Hardware is specifically designed for utmost durability and is specially treated to resist weather extremes. Thus, you are assured that every JOSLYN MANUFACTURING & SUPPLY COMPANY item requires less maintenance attention. Strict manufacturing specifications go into every unit, and prompt service and delivery are assured.

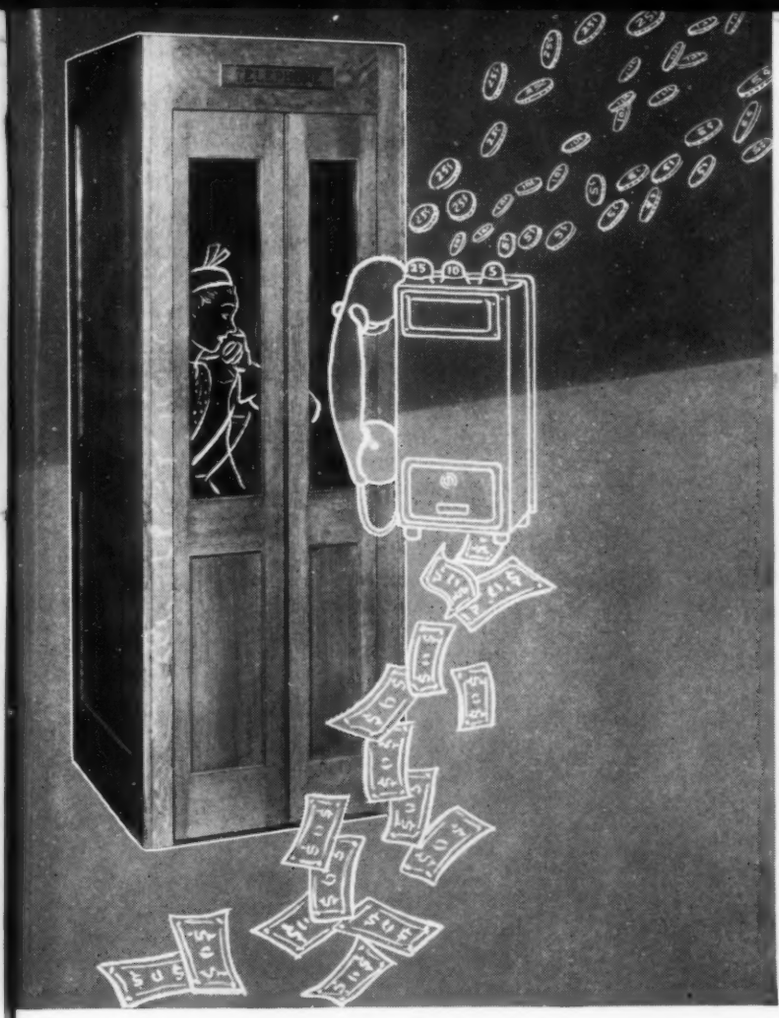


's a Tough Life they lead, but they don't weaken. Eveready" "Columbia" "Gray Label" Telephone ells have a nation-wide reputation for having ıstained voltage and long life. They're developed y the world's largest dry battery laboratory at ATIONAL CARBON CO., INCORPORATED.

On Guard—in Any Weather! Hemingray Insulators stay on the job through rain, snow, and summer heat. Made by OWENS-ILLINOIS GLASS CO., these *weather-proof* insulators are checked regularly under rigid specifications in the laboratory. Thus shipments are always uniform. Shown above is Hemingray No. 12.



Nothing to It! Sectionalized cable runs simplify trouble shooting and transmission testing. The COOK ELECTRIC CO. UA-20 Cable Terminal permits easy testing in either direction. With capacity for 51 pairs, it provides highly effective lightning, power cross and station protection.



Throughout the Country, it has been proved time and again that pay station revenues increase when the public is given the privacy of Telephone Booths. Churchill Booths particularly have the roominess, comfort and privacy which attract business. Typical is CHURCHILL CABINET COMPANY's No. 100 Booth, acoustically designed, with automatic light and ventilator.

A "Must" for Line Crews. No piece of equipment can do a job right unles it's *made* right, and that's why so many telephone companies use Chanc Pulley Blocks. The one shown above, part of A. B. CHANCE CO's complet line, comes in four different sizes with a capacity range from 2000 to 500 pounds. Easily carried up the pole, it has a leverage ratio of 32 to 1.

KELLOGG Recommends and Guarantees These Finer Supplies

. . . and that is your assurance that the line supply and construction materials shown here—all products of leading manufacturers—can be relied on for dependable service and lasting satisfaction. Like all line supplies listed and described in the Kellogg catalog, they are backed by the famous Kellogg "double guarantee." This is your best assurance of getting materials that will perform properly over a long period of time. Send your orders to . . .

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Factory and General Offices: 6650 South Cicero Avenue, Chicago 38, Illinois

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Order Your Line Supplies from KELLOGG

ROEBLING

FIVE OF A KIND

Here's a winning hand—five ace Roebling telephone wire products... to help you now in your day-to-day work... and to specify on your postwar blueprints. They're made for tough assignments and extra service... with the built-in dependability you want for the telephone circuits you service.

Backed by more than 100 years of wire specialization... modern manufacturing techniques...and our record of servicing telephone company requirements...the Roebling Trademark guarantees top performance and is an important safeguard against wire and cable failure.

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ROEBLING

PACEMAKER IN WIRE PRODUCTS

WIRE ROPE AND STRAND • FITTINGS • SLINGS COLD ROLLED STRIP • HIGH AND LOW CARBON ACID AND BASIC OPEN HEARTH STEELS • ROUND AND SHAPED WIRE • SUSPENSION BRIDGES AND CABLES • WIRE CLOTH AND NETTING • ELECTRICAL WIRES AND CABLES • AERIAL WIRE ROPE SYSTEMS AIRCORD, SWAGED TERMINALS AND ASSEMBLIES

SEND YOUR ORDERS
FOR FAST SHIPMENT
of Dependable
Runzel
CORDS
FOR THE TELEPHONE INDUSTRY
RUNZEL CORD & WIRE CO.
4723-31 MONTROSE AVENUE • CHICAGO 41

"It Seems to Us"

Will C. Dillon climbed his first telephone pole at the age of 9 in front of his home at Girard, Kan. That would be the year 1887. After 58 years following the same line he tells us the telephone business is really becoming interesting to him. He heads the W. C. Dillon Company and several other companies. Oh yes, the original Girard exchange was destroyed and rebuilt in 1895 for reasons obvious to all old timers.

•

Sam Dibble's writing gets around. His article, "What is Your Management I. Q.?" from our July 1 FORTNIGHTLY, is being reprinted in the Rose Polytechnic Institute's publication. He is the efficient general manager of Southern Continental Telephone Company, Cookeville, Tennessee.

•

To those of you that have been asking "Where is Nels Stoker?" we have the answer. Nels is now Major Nelson Stoker, U. S. Army, and lives at the University Club, Detroit, Mich. Before volunteering for service, Nels was the popular representative of James R. Kearney Corp., St. Louis, His job for Ordnance was expediting war material causing about 6,000 miles per month of air travel. He tells us he hopes to be back to his old hobby of photography and calling on telephone people before long.

•

Louis Pitcher, formerly exec. V. P. of USITA and for many years manager of the Dixon (Ill.) Home Telephone Co., is evidently enjoying his retirement. He was in Chicago recently to place his grandson in school and to see the Cubs play baseball. Louis brought us up-to-date on his son, Lieut. LetB. Pitcher, USN, who is serving on the mine sweeper that holds all records for World War II. LetB was in fourteen invasions made by the Navy in the Pacific.

•

Oct. 13th issue of SATEVPOST publishes picture and story about Fred Coffing, well known head of Coffing Hoist Co., Danville, Ill.

TELEPHONE ENGINEER AND MANAGEMENT

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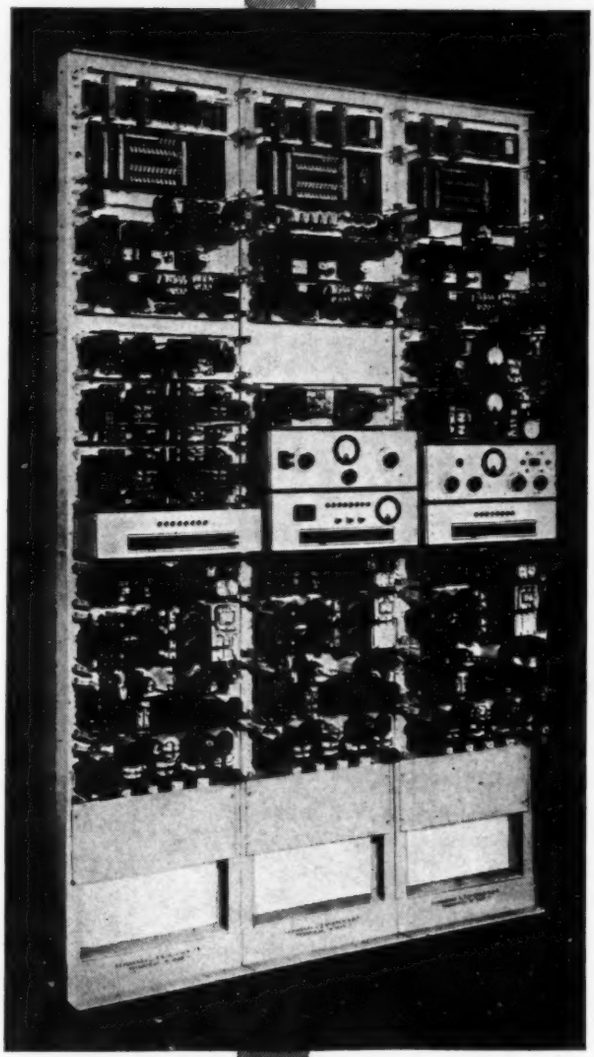
Founded in 1909

Office of Publication, Pontiac, Illinois. Executive and Editorial Offices 7720 Sheridan Road, Chicago 26 Illinois. Phone Rogers Park 3040. RAY W. SMITH, Editor: ROY F. SMITH, Adv. Manager, DON C. SORENSEN, Sales Prom. Mgr. Subscriptions: U. S., Cuba, Mexico $1.50 Per Year; Canada, $2.00; In all Other Countries, $3.50. Single copies, U.S.A., 15 cents. Single copy JANUARY 15 BLUE BOOK BUYER's GUIDE $1.00. All subscriptions should be sent DIRECT to 7720 Sheridan Rd. Chicago 26, Illinois.

EXECUTIVES!



Typical Telecommunications Transmission Terminal Station.

MORE TELEGRAPH AND TELEPHONE CIRCUITS WITHOUT EXTRA WIRES

To cater for increased telephone or telegraph traffic it is not necessary to provide costly additional cable or open-wire circuits. The existing route or routes can be canalised to serve extra requirements, and the resultant transmission is superior to normal.

The equipment which renders this possible is the joint product of two Companies of repute. It is the result of years of laboratory research and close technical liaison between the transmission experts of both Companies. It can be relied upon to be the most modern development of its kind.

For telecommunications of the future you will need—

ATE TMC TELECOMMUNICATIONS TRANSMISSION EQUIPMENT

MANUFACTURERS:

Please address enquiries to—

AUTOMATIC TELEPHONE & ELECTRIC CO. LTD.
STROWGER WORKS, LIVERPOOL
ENGLAND

TELEPHONE MANUFACTURING CO. LTD.
WEST DULWICH, LONDON, S.E.21
AND ST. MARY CRAY, KENT, ENGLAND

A801-A6

Where Appearance Counts

Where Space is at a Premium

ACOUSTIC
Steel Telephone Booths

offer unusual advantages

- All-steel construction
- Acoustic linings with sound absorbing material
- Choice of colors
- Space-saving equal leaf folding door
- Electric Ventilation and illumination
- Linoleum or rubber tile floor

The out-of-the-ordinary character of Sherron ACOUSTIC telephone booths is merely highlighted in the list above. Modern, functional design plus knowingly engineered features gives these booths top rating in efficiency and good looks . . . There is an ACOUSTIC booth for every purpose—industrial and preferred locations. Yes, telephone booths to fit into the most resplendent surroundings.

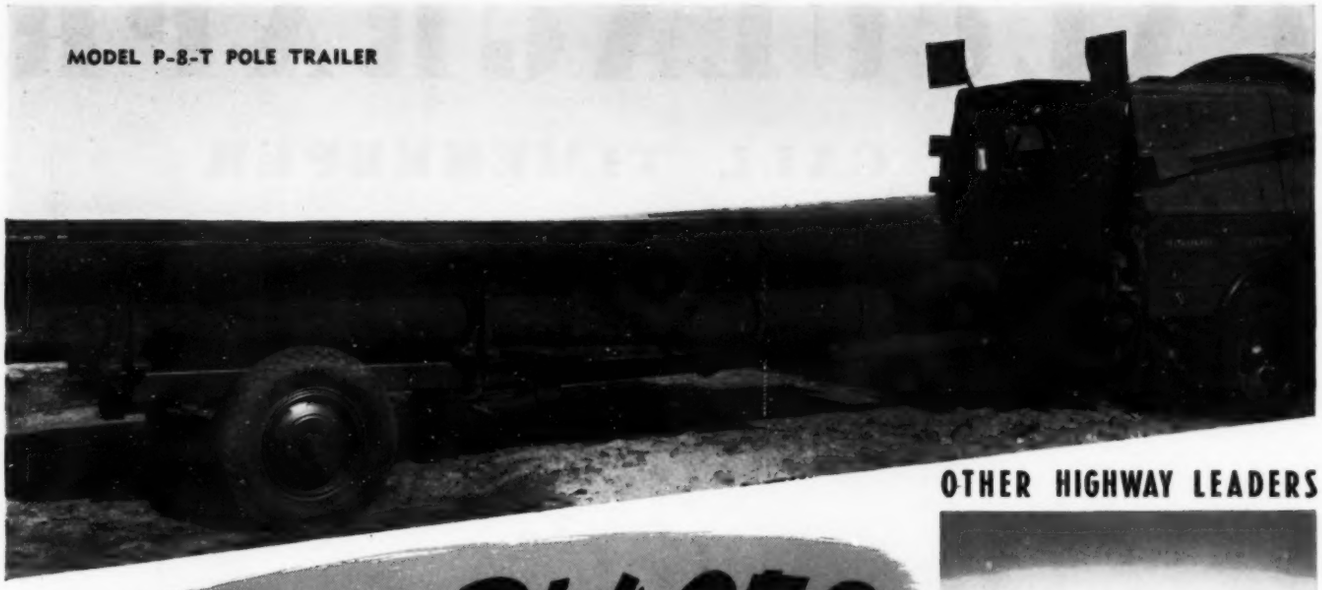
Outside Booth Dimensions
30" wide x 30" deep x 83¾" high

OUR TELEPHONE BOOTH ENGINEERS ARE AVAILABLE FOR CONSULTATION

Sherron Metallic Corporation

1201 FLUSHING AVE., BROOKLYN 6, N. Y.

MODEL P-8-T POLE TRAILER



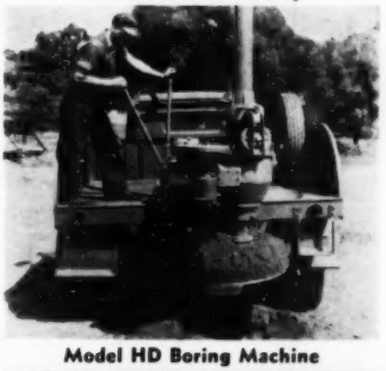
GOING PLACES WITH HIGHWAY

It's easy to get there with a load of poles, reels of cable, transformers, or other heavy, bulky equipment when you use Highway trailers designed especially for the job.

The entire load is carried on the trailer so it can be hauled by trucks equipped with any type of construction body.

OTHER HIGHWAY LEADERS

Model LCW-102 Body



Model HD Boring Machine

Model L-12-C Winch

HIGHWAY TRAILER COMPANY

MANUFACTURERS OF

TRUCK TRAILERS AND BODIES • EARTH BORING MACHINES • WINCHES • OTHER PUBLIC UTILITY EQUIPMENT

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CALCULAGRAPH

TOLL CALL TIMEKEEPER

MODEL 33
CALCULAGRAPH

WHERE Calculagraphs are used for timing Long Distance calls, the "*vital statistics*" (starting time and elapsed time) required for billing purposes are obtained quickly and accurately. • Recognition of the dependability of Calculagraphs for this service is their continued use, year after year, by telephone systems throughout the world.

CALCULAGRAPH COMPANY

INCORPORATED 1892

310 SUSSEX STREET • HARRISON, NEW JERSEY

"Reliable" is the word for it!

Reliable ZINC Cable Hangers wrap around the cable, securely attaching them to the messenger, minimizing creep, bowing and fatigue. No sheath cuts—no replacement of rings—no expensive equipment needed. Will outlast the cable.

The ZINC hangers bond the cable sheath and strand to give added protection against lightning. They are strong, easy to install and economical.

Also available in copper for use with copperweld or bronze messengers.

Build for the future—specify "Reliable."

RELIABLE ELECTRIC COMPANY

3145 CARROLL AVENUE
CHICAGO 12, ILLINOIS

OVER 35 YEARS SERVICE TO THE TELEPHONE INDUSTRY

Thermoplastic insulation specialists . . . producing a complete line from fine wires to heavy power cables . . . serving: Public Utilities, Radio, Electronic, Appliance and Instrument Manufacturers, Telephone Companies and Contractors.

Now

THERMOPLASTIC INSULATION

Nothing is constant but change . . . and in the wire and cable field the "change" to thermoplastic insulation has been tried and proved in the test tube of war. When victory is won you will demand the maximum resistance which these new compounds and constructions offer to heat, flame, oxidation, chemical action, oil, grease, moisture, cold, abrasion, fungus growth and other severe conditions. Write NOW for complete information and samples engineered to your particular requirements. Remember . . . when you're thinking of PLASTIC you're thinking of US!

PLASTIC

WIRE & CABLE *NORWICH CONN*

CORPORATION

For the Newest and Finest in *Modern Telephony*

look inside

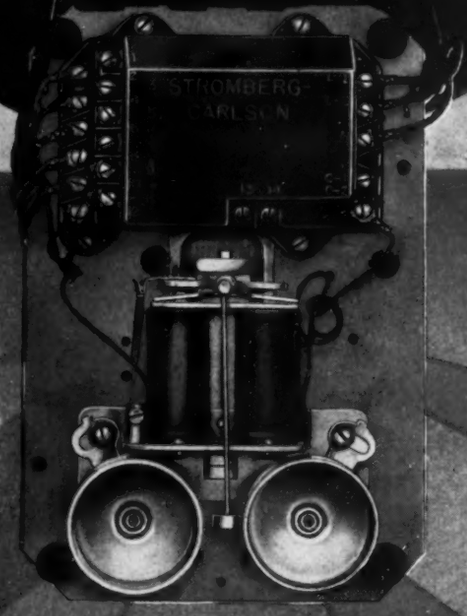
these new instruments by STROMBERG-CARLSON

STROMBERG-CARLSON

PROGRESS IN TELEPHONY

ONE BASE FOR FOUR INSTRUMENTS

YOU WILL LIKE THE CONVENIENCE AND ECONOMY OF THE SAME BASE IN THESE FOUR TYPES OF TELEPHONE INSTRUMENTS



No. 1243 DESK SET TELEPHONE SHOWN FOR MANUAL SERVICE

No. 1243 DESK SET TELEPHONE SHOWN FOR DIAL SERVICE

No. 1250 WALL TELEPHONE SHOWN FOR DIAL SERVICE

CONVERSION FROM ONE TYPE TO ANOTHER CAN BE MADE IN THE FIELD

If a man in the field wished to convert a No. 1243 Desk Set Telephone into a No. 1250 Wall Telephone, he would merely have to remove the two screws in the base and the two screws that hold the hook-switch assembly in the housing. He would then put on the No. 1250 housing, insert the handle and hook-switch into new housing, and re-assemble. By a similar process, the No. 1250 could be converted to a No. 1243.

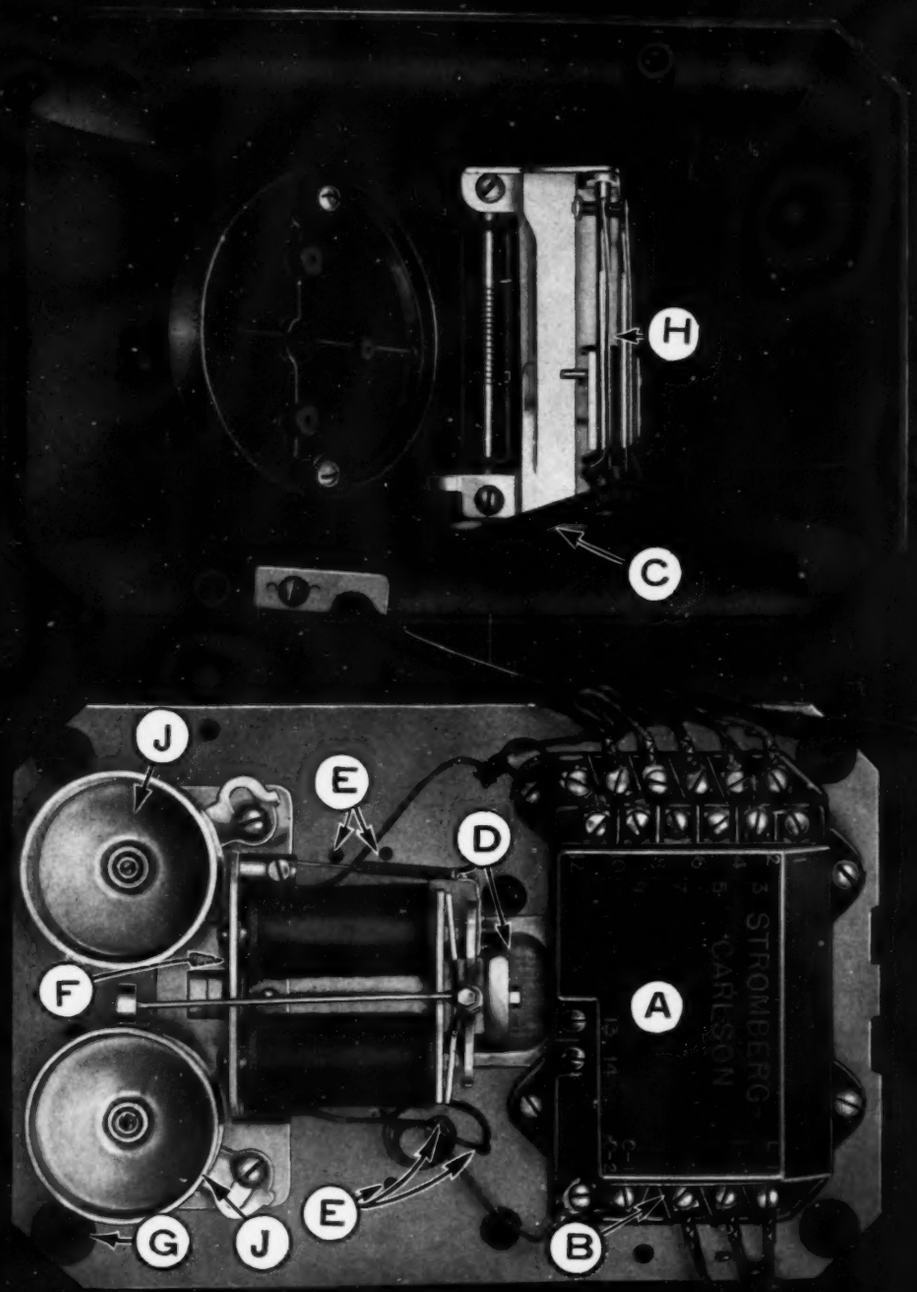
No. 1260 DESK SET BOX

A Plastic case which houses capacitor and induction coil potted in compound. Designed to offset trouble produced by humidity or other severe climatic conditions.

B Screw type terminals imbedded in the plastic case serve all connection purposes. Wiring to capacitor and induction coil concealed and protected.

C Separate cables are used to connect the hook-switch and dial circuits. Cables are covered by an outside braid. No loose wires to mar the streamlined appearance.

D A clear plastic window in the base allows free inspection of the code marking on the ringer without the necessity of opening the telephone.



E Provisions made for installing Vincent Rare Gas Relay or W. E. 333-A Vacuum Tube for special ringing conditions. Mounting space provided for the installation of Varistor in the Receiver Circuit.

F Ringer cushioned by rubber quiets the clatter normally radiated when the ringer is solidly mounted to metal. Mounting used allows ready interchange of types.

G Replaceable grommet type rubber feet prevent mars to furniture, protect the telephone from shock, and keep the instrument from slipping when dial is used.

H All No. 1243 and No. 1250 type telephones are arranged so that two-step hook-switch operation can be had by making a simple mechanical adjustment. This permits listening without connecting transmitter to line. (Details on next page.)

J Ringer gongs made from metal of different thicknesses produce a pleasant two-toned signal free from harshness, but far-reaching in attention-getting effect.

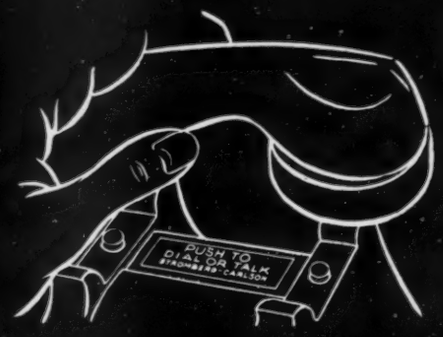
K Properly designed induction coil, capacitors and handset units produce maximum talking efficiency in the telephone circuit.

SIMPLIFIED ARRANGEMENT PERMITS LOWER PARTS INVENTORY

STROMBERG CARLSON
PROGRESS IN TELEPHONY

New

2-STEP HOOK-SWITCH IMPROVES PARTY LINE SERVICE



Removing handset from cradle enables subscriber to ascertain whether line is in use without connecting the transmitter.

If line is found to be free, subscriber depresses the instruction plate, which releases the instrument from listening position to normal operating position.

If line is found to be in use, or when conversation from station is completed, placing the handset on the cradle returns the instrument to its original condition.

STANDARDIZE ON THESE NEW SERIES OF OUTSTANDING TELEPHONES

These three new series of Stromberg-Carlson Telephones are ideal ones on which to standardize for many reasons other than the fact that all assemblies mount on the same base and use the same components with the exception of housings.

The two Desk Set Telephones (the Dial and the Manual) are similar in external appearance to the Company's preceding series.

The Wall Telephone is new in design and will be a welcome addition to the equipment of any home, store, or factory.

Two-step hook-switch feature can be applied to all of these instruments by a simple mechanical adjustment.

The new No.1260 Bell Box is no longer a straight-sided box, but has the advantage of an interesting design.

Order Test Samples of these new Stromberg-Carlson Telephones

STROMBERG-CARLSON

Factory, General Offices: Rochester 3, N.Y.

Branch Offices: Chicago 6, Kansas City 8, San Francisco 3

In Canada: Stromberg-Carlson Company Limited, Toronto

STROMBERG-CARLSON
PROGRESS IN TELEPHONY

ARMY E NAVY

LET'S FINISH THE JOB!

The surrender of our enemies doesn't mean our job is over. Our armed forces must be brought home. Armies of occupation must be supplied. Let's keep on buying War Bonds!

LENZ SWITCHBOARD CORDS

LOOK FOR LENZ THIS MARK OF QUALITY

A DEPENDABLE SOURCE

Specializing in the building of Quality Cords, Wire and Cable for 41 years has made LENZ a most dependable source.

For instance: The sturdy tinsel conductors of LENZ Switchboard Cords protected by extra strong insulation insures excellent transmission. Their lighter weight plus increased flexibility makes the job of handling peak traffic easier. Longer wearing braids assure maximum economy.

Write today for complete information.

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LENZ ELECTRIC MANUFACTURING CO.

1751 N. WESTERN AVE., CHICAGO 47, ILL., U. S. A.

"IN BUSINESS SINCE 1904"

You Get ALL THESE EXTRAS

Tremendous Strength
Exceptional Uniformity
Smooth, True Surfaces
Thorough Impregnation
Clean, Dry Finish

EXTRA LIFE!

TAYLOR-COLQUITT CO. T-C TIMBER CONSERVATION

in Taylor-Colquitt Poles

You get a lot of "extras" when you use Taylor-Colquitt Poles of Southern Pine.

Sound, straight trees, from some of the finest stands in the South, provide poles with tremendous strength, and the uniformity that makes good-looking pole lines. Each pole is machine-trimmed, on special Taylor-Colquitt machines—turned out round and smooth and true. And then, after proper seasoning, it is treated with creosote—thoroughly impregnated to a depth of 2½ inches (or 95% of the sapwood)! A final treatment with live steam produces a clean, dry finish, makes poles easy to handle in any weather.

These Taylor-Colquitt "extras" at every point ***pay off*** in EXTRA YEARS of trouble-free service. That's why we sell, and recommend, Taylor-Colquitt poles.

AUTOMATIC ELECTRIC SALES CORPORATION

1033 WEST VAN BUREN STREET, CHICAGO 7, ILLINOIS

DRAKE A NAME TO REMEMBER for RELIABLE SOLDERING EQUIPMENT

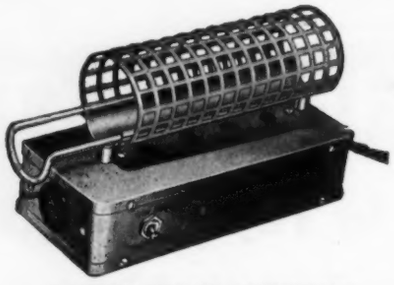
Through 25 years of soldering iron manufacturing, Drake has developed soldering products that set new high standards of quality and long-lived performance.

DRAKE No. 400, for example, is ideal for work in small places—weighs only 8 ounces and is only 9 inches long, yet it is a 60-watt iron.

DRAKE No. 600-10, is conservatively rated at 100 watts, but is only 10 inches long.

DRAKE SOLDER POTS

are available in 150 and 300 watt ratings to meet varying needs.



DRAKE HEAT CONTROL

is a fool-proof device for keeping idling irons ready for quick use.

*GraybaR QUALITY SINCE 1869 *REG. U.S. PAT. OFF. Distributed by *GraybaR ELECTRIC COMPANY

Immediate shipment from stock on moderate quantities with priority rating of AA-5.

DRAKE ELECTRIC WORKS, INC.
3656 LINCOLN AVE. CHICAGO 13, ILL.

Now that the Wars are won---

There are many things that must be done,

to get back to normal operations.

—

We are prepared to help you solve any or all of your problems—

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Write or call

GUSTAV HIRSCH ORGANIZATION

310 WEST BROAD STREET
COLUMBUS 8, OHIO
Main 6533

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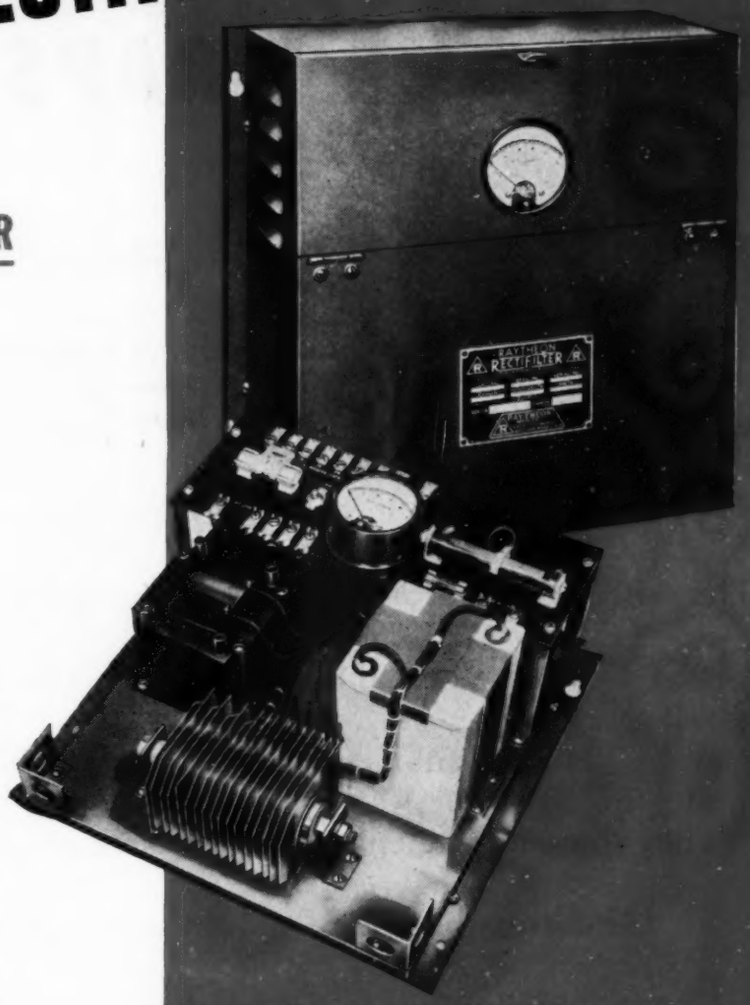
Nationally and Internationally known.

REPLACING EQUIPMENT? SPECIFY...

Raytheon RectiFilteRs



TELEPHONE DC POWER
DIRECT FROM AC.
NO BATTERIES
NO SERVICE
LONG LIFE

INDEPENDENT telephone companies all over the country are ending their power problems, improving service and cutting operating expense by replacing storage batteries with Raytheon RectiFilteRs.

The RectiFilteR is essentially a dry disc rectifier with associated components and a Raytheon control circuit. Together they provide a highly efficient and time-tested method of supplying continuous stabilized DC voltage direct from an AC source. The RectiFilteR eliminates and outlasts many batteries, releases wires for telephone service. And since the RectiFilteR is a magnetic automatic unit it requires neither adjustment nor maintenance.

RectiFilteR Bulletin DL48-156H tells the story. Write today.

RAYTHEON
MANUFACTURING COMPANY
WALTHAM 54, MASS.

ELECTRICAL EQUIPMENT DIVISION
Excellence in Electronics

TAKING THE WRAPS OFF RADAR

On the opposite page are two advertisements.
One was published in national magazines
more than a year ago, when Radar was a
closely guarded military secret.
The other advertisement appears during October, 1945.
Between them they reveal vital facts
about a modern scientific triumph.
They show how telephone advertising progressively
informs the public about the industry's
contributions to the whole broad field
of electronic research and development.

AN ADVERTISEMENT OF THE BELL TELEPHONE SYSTEM

IT HELPED WIN A GREAT BATTLE

Sealed in this box and deposited in the vaults of the Bell Telephone Laboratories is a special device that helped win a great battle. It is being preserved for its historical significance.

Such things do not just happen. Now in armaments of war may appear suddenly on the battle fronts. But behind them are long years of patient preparation.

Our scientists were organized to have this device ready for battle—just as our fighting forces were organized to be ready for that battle.

Developing secret military devices job but big forces are busy on it, da

Concentrating on this job are m people in the Bell Telephone Its scientists and engineers a associates form a highly ori personnel in working thing

Today's work for war ha years ago when the founded as part of th to the public.

BELL TELEPH

APRIL, 1944

IT HELPED SINK SIX JAPANESE WARSHIPS

A little over a year ago we told you how a secret device had helped win a great battle. The device came back from the wars, was sealed in a box, and placed in the vaults at Bell Telephone Laboratories.

We couldn't tell you the full story then for security reasons, but now we can open the box and let you know what was inside. It was a magnetron, a kind of electronic tube, installed and operated in Radar equipment on the famous *U. S. S. Boise*.

The Radar was used in night action off Savo Island in the Solomon Island group on October 11-12, 1942. During the engagement, six Japanese warships were sent to the bottom.

Long before Pearl Harbor the Government asked Bell Telephone Laboratories to put its wide experience and knowledge of electronics to work in perfecting Radar as a military instrument. Through Western Electric Company, its manufacturing branch, **the Bell System became the largest source of Radar for our fighting forces.**

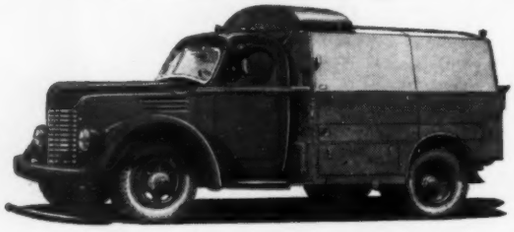
This is not surprising for Radar development and production stem from the same roots that produced and continue to nourish this country's telephone system.

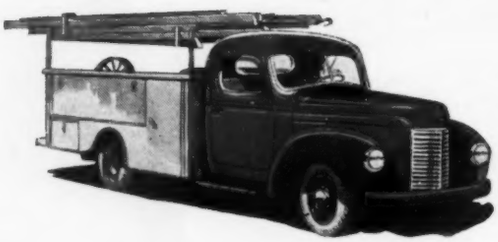
BELL TELEPHONE SYSTEM

OCTOBER, 1945

OUT OF THIS WAR
—the Red Diamond Engine

International Red Diamond Engine. Heavy-duty power for heavy-duty work. Ample power and capacity—surprising economy. Proved in actual combat warfare, now available for civilian service.





THE rugged requirements of warfare on every battlefront have inspired the engineering genius of American industry.

Out of this war has come, for example, the *new International Red Diamond Engine.*

Tens of thousands of International Military Trucks and Half-Tracks—powered by this new International Red Diamond Engine—have set new transportation and combat records in wartime service.

Many of these mighty Red Diamond Engines have already gone into International Heavy-Duty Trucks for essential civilian use. The men who operate them will vouch for the stamina and economy of adequate power for any job.

When new trucks roll out in volume on America's highways, look to International for even greater economy, even greater dependability. And remember—for ten years before the war *more heavy-duty Internationals were sold than any other make.* Backed then, as now, by the *world's largest company-owned truck service organization.*

INTERNATIONAL HARVESTER COMPANY
180 N. Michigan Ave. Chicago 1, Illinois

NEW TRUCKS: The government has authorized the manufacture of a limited quantity of light, medium and heavy-duty International Trucks for essential civilian hauling.

SERVICE: Many operators will have to wait for trucks. Maintenance of existing vehicles is just as important today as before V-J Day. Therefore—be sure your trucks get top care and service at International Truck Dealers and Branches.

INTERNATIONAL HARVESTER

INTERNATIONAL

INTERNATIONAL Trucks

You can't beat the *Nicopress* method of making Dead-ends

1. They are designed for use on copper, Copperweld and iron wire.
2. Simplicity and speed of installation.
3. Strength and tightness.
4. Provide for a tail of any desired length.
5. No extra tools are required to make the offset dead-end as the same tool used in making regular line splices will do the job. These convenient Nicopress tools are small and compact and are extremely easy to operate close to the insulators or cross arms.

THE NATIONAL TELEPHONE SUPPLY COMPANY

The National Telephone Supply Company

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Canadian Mfr. — N. SLATER CO., LTD., HAMILTON, ONT., CANADA

Export Distributor — INTERNATIONAL STANDARD ELECTRIC CORP., NEW YORK, N.Y.

Copperweld TELEPHONE LINE WIRE

BRINGS YOU THESE Proved Advantages:

EVERY COIL TESTED

HIGH CONDUCTIVITY

BETTER VOICE TRANSMISSION

ALLOY STEEL

COPPER

THE STRENGTH OF ALLOY STEEL

ONE CENT

PERMANENT RESISTANCE TO RUST

SAFE FOR LONG SPANS

IDEAL FOR HIGH FREQUENCY CIRCUITS

LOWEST MAINTENANCE COSTS

Over Half a Million Miles Used By The U. S. Signal Corps

Copperweld

COPPERWELD STEEL COMPANY • GLASSPORT, PA.

EDITORIAL

Is It Going to be Inflation?

THE bugaboo of every industry for which prices are fixed by governmental agencies—and that includes, of course, the telephone industry—is inflation.

If there is inflation, the costs of everything having to do with the supplying of telephone service can and do rise much faster than the revenues of telephone companies, which must be fixed by the relatively slow and laborious processes inherent in the regulation of rates.

Our country now faces an economic dilemma of first magnitude. Substantial segments of workers are demanding wage increases. It is no secret that the government is sympathetic to such claims, *provided* the wage increases can be made without the increase of prices for the things produced.

Spokesmen for government have been saying that wages can be substantially increased without corresponding increases in prices. They intimate that if wages are increased, say, 15%, prices need be increased only slightly—say 2% or 3%—or not at all. With increased incomes, people will spend more money, more things will have to be manufactured, and the manufacturer, making many more things, can make each of them at less cost.

This, it is clear on analysis, is a "mass production" theory. It assumes that everything can be supplied more cheaply if more of it is supplied.

This theory, it is also clear on analysis, does not apply to the telephone business. There is no such thing as mass production of telephone service. Nor is there any such thing as mass production of the major items of telephone equipment.

Anybody who knows anything at all about the telephone business knows that when a telephone exchange must go to the operation of a multiple switchboard, costs per station and per call rise; also, that when multiple boards must be used in a multi-office area, costs per station and per call rise still further. Mass production of telephone service, from a cost standpoint, is not possible under the present stage of development of the art.

The telephone industry is not the only industry in this situation. The same thing applies to many other industries. You cannot, for instance build high-class residences, or locomotives, or tailor-made clothing, on a mass production line.

IN the telephone business, costs go up as wages go up. The only way of overcoming increased costs is by increased revenues. This is something the regulatory commissions will have to recognize, whether they like it or not.

If you take all the profit out of business, then business is not going to invest its money for expansion. If business does not expand, where will the 60 million jobs that we need come from? And what is the good of wages, low or high, if there are no jobs in which to earn them?

The country is up against an economic dilemma. The way the Federal government is now dealing with it, we seem to be headed for more inflation.

Wise telephone managements—being, as they are, in a business with regulated charges—will be making their plans to meet this additional inflation by increasing their revenues. The regulatory commissions are going to be on the spot. The big question about them is going to be whether they are merely political agencies, bent upon attempting to ingratiate themselves with the public by holding down utility rates, regardless of inflation, or whether they are going to serve the high purpose for which they were created, of protecting the utility as well as protecting the public.

Highlights of the Communications News

Important Communications developments of the past month, briefed for busy readers

by
ROLAND C. DAVIES
Editor, Telecommunications Reports

THE ferment of unrest which is seething throughout the world entangled the telephone industry recently with the nationwide work stoppage of the Bell System workers with the long distance operations slowed down to approximately 30 per cent of normal operations. It definitely raised the spectre of the effects of a group of public service employees on the operations of a utility just as the group of public service employees on striking elevator operators in New York city had previously thrown into disruption the activities and life of a major segment of the nation's largest metropolis.

Because of this demonstration of work stoppage power in our telephone industry—and the National Federation of Telephone Workers' affiliated unions gave its leadership a virtually unanimous vote of confidence on its issue of receiving from the Federal Government agencies equality of treatment with the AFL and CIO—, labor is definitely the NUMBER ONE subject of interest for our industry in Washington affairs. It is the most important subject of legislation, too, for the industry in Congress in the pending measures for the boosting of the minimum wage.

But the American public and nation's business, including the telephone industry, well realize that the United States is not experiencing by any means the swing to the left going on in the rest of the world such as the Communist drives in Europe, South America and the Far East. The pendulum may begin to swing back towards the center if the excesses of the left become too great and the situation in the United States may revert to a more stabilized condition—one in which intelligent compromise, the pathway being followed by Secretary of State Byrnes in the peace discussions, will prevail.

In regard to the legislation to increase the minimum wage to 65 cents an hour, there is a definite cooling-off in Congress to such a step as a result of the wave of strikes and fear of an inflation spiral. Wage-Hour Administrator L. Metcalfe Walling gave a tip-off in his recent statement to the Senate Education and Labor Sub committee and definitely paved the way for a 55-cent minimum wage compromise. He even went so far as to point out the dangers of the effect of too big a boost in minimum wages upon prices and recommended any such increases to be promulgated through the tripartite industry-labor-government committees of his agency to prevent disruption of profitable operations of a business or industry.

For the Independent telephone industry that lends hope for the kind of treatment of its minimum wage problem—not special treatment, but intelligent treatment, as retiring USITA president John P. Boylan so succinctly cited in his annual report and drew the distinction between the cost of living in large cities and smaller towns. The Independent telephone industry through its special Wage-Hour Committee Chairman, "Jack" Crowley, veteran secretary of the Minnesota Telephone Association, and USITA Executive Vice President Clyde S. Bailey are presenting the position of the Independent industry on the minimum wage increase proposal and on the question of exemption of the small companies of the industry from these requirements to the Senate Subcommittee—in fact see page 87 for the last minute wired report of their appearance. The statement of the spokesman for the telephone labor unions, Al Philip Kane, general counsel of the National Federation of Telephone Workers, is summarized in another portion of this column. The CIO's American Communications Association also is likely to make a more vigorous attack on telephone industry wages when it appears before the Senate body.

There is NO question, but that the issue of the demands for increased wages and its effect on prices has the Federal governmental leadership greatly concerned. Secretary of Labor Schwellenbach is trying to work out a plan to permit price increases to compensate for wage boosts which will endeavor to curb any inflation spiral. The telephone industry has a much more difficult situation in this field with its rates frozen by regulation and virtually unchanged during the war despite the rise of costs of materials and wages by 25 per cent or more. There is NO doubt but that, if the telephone industry is to continue service with these substantial added operating costs, it must have rate relief and boosted charges to the public, fully explained by the regulatory commissions and companies so the subscribers will understand the necessity for such steps. The National Federation of Telephone Workers spokesman, General Counsel Kane in his statement to the Senate Subcommittee struck home the note of the need for increased rates to subscribers to meet the wage costs.

Convention Dates

Michigan Telephone Association, Hotel Olds, Lansing, October 16.

Telephone Association of Maine, October 17, Elmwood Hotel, Waterville, Maine.

Virginia Telephone Association, Hotel Roanoke, Roanoke, October 25 and 26.

Missouri Telephone Association, Hotel Muehlbach, Kansas City, November 12 and 13.

North Carolina Telephone Association, Pine Needles Hotel, Southern Pines, November 12 and 13.

Alabama Telephone Association, Montgomery, November 19 and 20.

Kentucky Telephone Association, April 4 and 5, 1946; no place yet named.

Ohio Telephone Association, Deshler-Wallick Hotel, Columbus, April 23-24, 1946.

FCC Occupied With Broadcasting

MEANWHILE, none of the other "fronts" in Washington presents any such important aspects as the labor-wage developments.

The FCC, for example, is virtually 100% occupied with broadcasting problems—the establishment of FM and television stations. Commission Chairman Paul A. Porter in a recent address pointed out that fact with emphasis but cited that the telephone industry, as typified with the Bell System's two billion dollar postwar expansion plans, was actually planning bigger and more extensive expenditures for the reconversion period than the more-publicized broadcasting industry. However, this should mean that the FCC as a facet in Washington for the industry to follow will be a rather unimportant agency until its broadcasting tasks are cleaned up.

"NOTHING WRONG—WE'RE JUST KEEPING OURSELVES FROM RUSHING OUT TO BUY EVERYTHING IN SIGHT!"

Rural Telephone Legislation

THIS subject is definitely shelved until next year in Congress, its proponents admit. But it may well bob up then. The Rural Electrification Administration under its new Administrator, former Secretary of Agriculture Wickard, is being moved to Washington from St. Louis about Dec. 1 or at the latest Jan. 1 and every governmental agency, which is near the seat of legislation, will press its claims to Congress vigorously. FCC Chairman Porter, too, significantly indicated recently that, besides the plans of the telephone industry to expand rural telephone service, Congress is formulating legislation to have the Federal Government participate in this program.

Surplus Property

SURPLUS War Equipment—The appointment of David H. O'Brien, former vice president of the Graybar Electric Co., to be assistant administrator of the Surplus Property Administration in charge of capital producers' goods and plants, which will include telephone-radio-electronics military surplus equipment, is a step which insures a person with a knowledge of the industry at the helm. It should mean "screwy" ideas are to be out the window at the SPA about the disposal of the telephone surplus apparatus and parts and that there will be a reliance and close liasion with the telephone manufacturers on the marketing and distribution of this equipment. The RFC plan of using the manufacturers as the disposal agents will NOT be disturbed as had been threatened by some of the staff members of the old Surplus Property Board, it is indicated. Mr. O'Brien during the war was in charge of the Signal Corps, distribution of billions of dollars worth of telephone-telegraph-radio-electronics equipment to the fighting units all over the world. He worked under Major General William H. Harrison who recently returned to the American Telephone and Telegraph Company to reassume his post of vice president in charge of the operation and engineering department.

In a forthcoming issue of TELEPHONE ENGINEER, we hope to have a full picture of the Surplus Property Administration's plans and outlook for telephone apparatus and components from the most authoritative sources in that agency handling this work.

Would Cut Exemption To 300 Stations

THE Independent telephone industry came in for the brunt of attack on having substandard wage levels from Al Philip Kane, general counsel of the National Federation of Telephone Workers, in a statement, filed with the Senate Education and Labor Committee supporting vigorously the boost in the minimum wage to 65 cents an hour. Even though he agreed the claims of the inability of small Independents to pay present-day levels of the minimum wage must be separately considered, the NFTW General Counsel proposed to the Senate Committee that NO exemption at all should be granted to telephone exchanges but that, if any exemption is granted, it should apply ONLY to cooperatives servicing **less than 300 stations** and to small companies with a single exchange or an aggregation of exchanges with less than 300 stations. (The Senate bills under study contain the existing provision of exempting switchboard operators in exchanges with less than 500 stations.)

The NFTW General Counsel did strike home a note that, if higher subscriber exchange rates are needed to raise revenues for the payment of adequate wages to employees, the public should recognize the fairness of such a situation in the form of higher rates and state regulatory commissions should be required to approve the applications of the telephone companies. "Where unconscionable low wage rates now exist," Mr. Kane declared in his statement, "prompt application for price relief should be made by the operating companies so that respectable wages may be paid. To the discredit of the Independent companies it must be said that they have not made those requests in the past. If Congress passes the proposed bill (65 cents minimum), they may be required to make the applications, but, if the claim is true, the state regulatory commissions will be required to approve their applications."

There can be absolutely no justification for a policy, he stated, which, in the interest of public utility price regulation, shifts the burden of paying for telephone service from the

(Please turn to page 79)

PHILCO
FLOTÉ
HAS GREATLY
ADVANCED
TELEPHONE BATTERY
ENGINEERING
MOST IMPORTANT of all the advanced engineering features contributing to the tremendous capacity and long life of Philco Telephone Batteries is the modern Floté plate. In full float service, this plate provides high capacity and sustained high voltage at minimum cost. It is strong, durable and is cast in a special metal for superior conductivity and efficient current distribution. In every detail of engineering, quality and workmanship Philco Floté stands out as THE modern Telephone Battery. Write for latest catalog giving specifications.
Spray Proof Vent Chambers
High Acid Space
Floté Plates
High Capacity, Sustained
High Voltage, Long Life
Built-in Charge Indicator
Hard Rubber Retainers
Quarter-Sawed Douglas
Fir Separators
Super Braced Corner
and Side Locks
Supported Elements
Steel Glass Jar
(⅛ inch thick)
PHILCO
Famous for Quality
the World Over
PHILCO CORPORATION
STORAGE BATTERY DIVISION
TRENTON 7, NEW JERSEY
FOR 50 YEARS A LEADER IN INDUSTRIAL STORAGE BATTERY DEVELOPMENT

ORDER U-2

Preference Sequence

THE preference sequence and categories in Telephone Limitation Order U-2 were approved September 27 by the War Production Board to be continued as long as necessary for the filling of "held" orders for telephone subscriber service. All other controls have been relinquished by the WPB and the new preference sequence has a schedule, A-2, added to take care of reconversion problems. Under the amended order, the prohibition on residence extension service has been lifted and such services will be permitted when and where equipment is available.

The schedules of preference categories, remaining in Order U-2, which will be administered in connection with appeals by a two-person unit continuing with the WPB and when that is terminated with the Office of War Mobilization and Reconversion, follow:

Schedule A-1—Governmental and Public Health and Welfare

1. **Governmental**
   - (a) Official Army, Navy, Marine Corps and Coast Guard Units and the Veterans Administration.
   - (b) Official Federal, State, county and municipal government services.
   - (c) Official agencies of foreign governments.
2. **Public Health and Welfare**
   - (a) Public or private organizations directly serving the public safety, health or welfare, such as: hospitals, clinics, sanitoria; physicians, surgeons, dentists, nurses, nurses' registries, veterinarians, ambulance services, manufacturers or distributors (wholesale and retail) of drugs, surgical, medical, hospital or dental supplies or equipment; mortuaries, burial service organizations; the American Red Cross and similar agencies.
   - (b) Philanthropic and eleemosynary organizations recognized as such by the Bureau of Internal Revenue, including their fund-raising offices; United Service Organizations and other similar organizations; religious establishments and their officiating clergy; Christian Science Practitioners; public and private schools.
   - (c) Press Associations, newspapers, radio broadcasting stations.
   - (d) Public transportation, pipe line companies, all types of public utilities.
   - (e) Labor unions having bona fide collective bargaining agreements with business concerns identified in Schedule A-1.

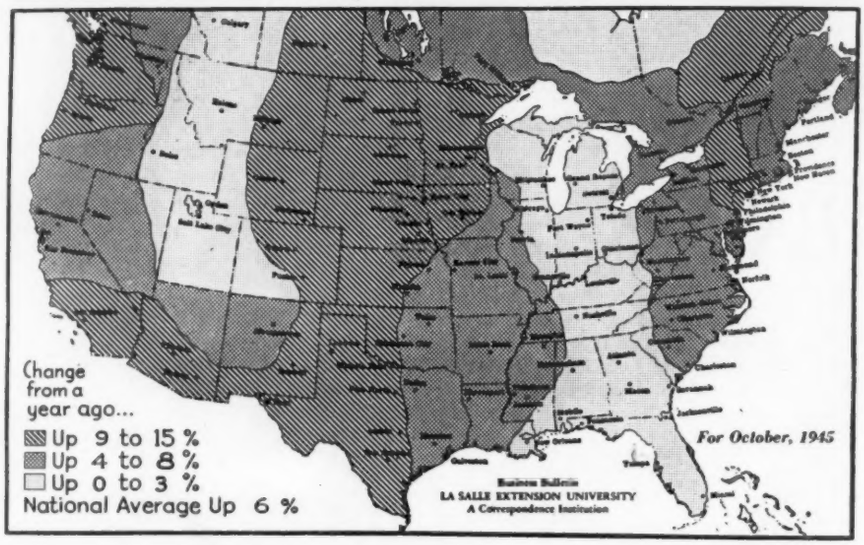
Schedule A-2—Military Production, Reconversion and Employment

- (a) The hiring of substantial numbers of people.
- (b) The furnishing of material, equipment or facilities under prime or subcontracts to the armed forces of the United States and by suppliers to such prime or subcontractors; the converting of war plants to peacetime operations; and the re-establishing under the same ownership of businesses which were obliged to close during the war because of lack of materials or manpower or because of wartime regulation; persons (such as engineers, architects, contractors, chemists, lawyers and accountants) who perform special services for these activities or for public works projects.
- (c) The production and wholesale distribution of fuel and lumber and other construction materials and construction equipment and mining equipment; mining operations and mining engineers.
- (d) The maintaining or servicing of equipment essential to the following: The armed forces, production for the armed forces or conversion from such production, public works projects, public transportation, public utilities, pipe line companies, mining operations, and producers of fuel, lumber, and other construction materials and construction equipment and mining equipment.
- (e) Food processing, food distribution (wholesale and retail) and food storage and production of substantial quantities of food.
- (f) Labor unions having bona fide collective bargaining agreements with business concerns identified in Schedule A-2.

Schedule B—Serious Illness or Physical Disability

1. Residence main service where the attending physician or surgeon certifies in substantially the form set forth in the Schedule B Certification Form (WPBI-2101) that there exists a condition of serious illness or pregnancy involving serious complications, that he must be called repeatedly at unpredictable intervals for emergency

LaSalle Map of Business Conditions


Change from a year ago...
Up 9 to 15 %
Up 4 to 8 %
Up 0 to 3 %
National Average Up 6 %
For October, 1945
Business Bulletin
LA SALLE EXTENSION UNIVERSITY
A Correspondence Institution

treatment and that in view of all the circumstances telephone service is essential. Such service shall be terminated within 30 days of the termination of the conditions specified above.

2. Residence main service where a person lives alone and the attending physician certifies in substantially the form set forth in the Schedule B Certification Form (WPBI-2101) that such person is confined to residence quarters for a protracted period by reason of serious illness or physical disability and that in view of all the circumstances telephone service is essential; residence main service where a blind person lives alone. The phrase "live alone" includes a person who is alone all day or during the day or night working hours, except for one or more children aged fifteen years or younger or another person either blind or similarly certified to be confined to residence quarters by reason of serious illness or physical disability. Such service shall be terminated within 30 days after the termination of the conditions specified above.

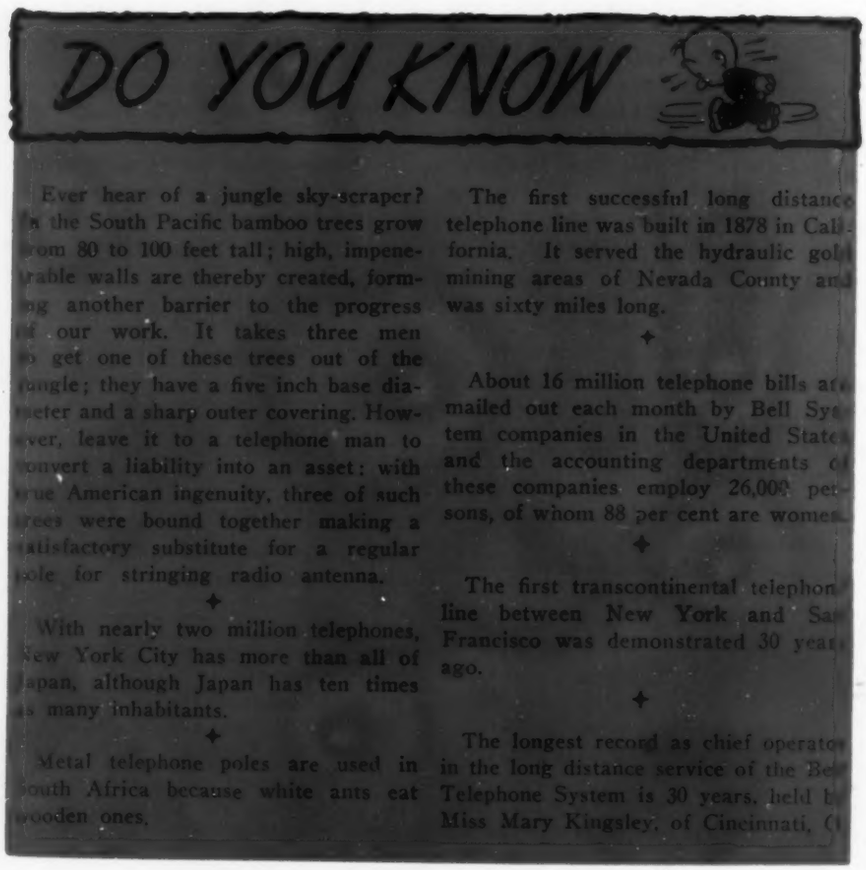
3. Residence main service for a seriously disabled veteran of the armed forces of the United States who applies for service within twenty-four months after being honorably separated from the armed forces. For the purpose of this paragraph a veteran will be considered seriously disabled if he is receiving disability payments of fifty dollars a month or more from the Veterans Administration. The applicant for service must certify to these facts in substantially the form set forth in the Certification Form (WPBI-2545).

Schedule C—Veterans and Servicemen's Families

1. Residence main service for the wife of a member of the armed forces of the United States or the merchant marine who is on active duty away from home, where she is pregnant and there is no one else in her household, or where her household consists only of herself and one or more children aged fifteen years or younger; and under the same circumstances for a widow whose husband died since January 1, 1940 while a member of the armed forces of the United States or the merchant marine. For the purpose of this paragraph the presence of one or more persons who are blind or confined to residence quarters by reason of serious illness or physical disability shall be disregarded. The applicant for service must certify to these facts in substantially the form set forth in the Schedule C Certification Form (WPBI-2102.

2. Residence main service for those who discontinued residence service upon entering the armed forces of the United States or the merchant marine and who apply for service within twenty-four months after being honorably separated or placed on terminal leave from the armed forces or the merchant marine. The applicant for service must certify to these facts in substantially the form set forth in the Schedule C Certification Form (WPBI-2102).

3. Residence main service for a veteran who is head of a family (that is, who maintains in one household one or more individuals other than himself who are connected with him by blood relationship, relationship by marriage, or by adoption) and who applies for service within twenty-four months after being honorably separated or placed on terminal leave from the armed forces of the United States or the merchant marine. The applicant for service must certify to these facts in substantially the form set forth in the Schedule C Certification Form (WPBI-2102).


DO YOU KNOW
Ever hear of a jungle sky-scraper? In the South Pacific bamboo trees grow from 80 to 100 feet tall; high, impenetrable walls are thereby created, forming another barrier to the progress of our work. It takes three men to get one of these trees out of the jungle; they have a five inch base diameter and a sharp outer covering. However, leave it to a telephone man to convert a liability into an asset: with true American ingenuity, three of such trees were bound together making a satisfactory substitute for a regular pole for stringing radio antenna.
✦
With nearly two million telephones, New York City has more than all of Japan, although Japan has ten times as many inhabitants.
✦
Metal telephone poles are used in South Africa because white ants eat wooden ones.
The first successful long distance telephone line was built in 1878 in California. It served the hydraulic gold mining areas of Nevada County and was sixty miles long.
✦
About 16 million telephone bills are mailed out each month by Bell System companies in the United States and the accounting departments of these companies employ 26,000 persons, of whom 88 per cent are women.
✦
The first transcontinental telephone line between New York and San Francisco was demonstrated 30 years ago.
✦
The longest record as chief operator in the long distance service of the Bell Telephone System is 30 years, held by Miss Mary Kingsley, of Cincinnati, O.

NEWS Briefs...

NARUC Convention in Miami

In order to maintain its unbroken line of annual conventions, the NARUC Sept. 27 decided to hold its 57th session at Miami during the last week of November or the first week in December, approximately the same time as the meeting in 1940.

For the telephone industry the highlight will be an address by FCC Commissioner Paul A. Walker on the wartime developments and improvements in the telephone industry and the outlook of future regulation in connection with these new services. A day's session will be devoted to the rate base and rate of return of utilities.

Rate Increase

On September 24, 1945 the Pillager (Minn.) Telephone Exchange received permission from its state commission to increase its rates following certification of repairs and overhauling of station equipment and wiring. Old and new rates are as follows:

	Old Net Rates	New Net Rates
Individual line business	$1.25	$2.50
Two-party line business	1.00	2.00
Four-party line business	1.00	1.50
Extension stations-business		1.25
Individual line residence	1.00	2.00
Two-party line residence	1.00	1.50
Four-party line residence	1.00	1.25
Rural multi-party switching charge	.25	.50
Individual owned telephones		1.00

$674,000 Toll Cable Project

The Wisconsin Telephone Company was authorized by the FCC on September 18 to construct a toll cable between Milwaukee and Sheboygan, a distance of 55 miles, which will provide 68 additional telephone channels initially. The cable will be mostly buried and is needed to handle the traffic increase in that section as well as serving as an alternate route to Milwaukee, Appleton and Bay Ridge. One branch cable to Belgium, Cedar Grove and Oostburg is included in the project.

Acquires Rural Exchange

On September 24, J. C. Steinhagen received authorization by the Minnesota Railroad and Warehouse Commission to purchase and Peter Giesler to sell the Dodge Center (Minn.) Telephone Exchange.

Welcome Home

Two huge banners, centered on the West Street side of the Headquarters Building of the New York Telephone Company at 140 West Street, New York City, between the seventh and ninth floors, are plainly visible from the decks of transports steaming up the Hudson River with our returning service men. The 7-foot high white letters on a blue background stand out in sharp relief and are easily discernible from the distant New Jersey side of the river. New York Telephone Company is to be congratulated on this extra bit of thoughtfulness for our boys returning home.

Banners of welcome from the New York Telephone Company building can be easily seen by all servicemen moving up the Hudson River on returning transports.

OPA Advisory Committee Meeting

Members of the Independent telephone industry discussed problems faced by the industry during the reconversion period at the first meeting of the new OPA Independent Telephone Industry Advisory Committee on Oct. 1 in the Stevens hotel, Chicago, Ill.

The members of the committee are: R. V. Achatz, Aurora, Ind.; F. S. Barnes, Rock Hill, S. C.; F. E. Bohn, Fort Wayne, Ind.; A. H. Bowden, Almond, Wis.; H. V. Bozell, New York, N. Y.; W. B. Clay, Hutchinson, Minn.; V. E. Code, Topeka, Kans.; Francis Crosby, San Francisco, Calif.; H. E. Foster, Winthrop, Maine; D. O. Hood, Portland, Ore.; W. E. Lawton, Viroqua, Wis.; G. B. Quatman, Lima, Ohio; D. T. Strickland, Brownwood, Tex.; and H. W. Vaughn, Fayette, Ala.

Rae E. Walters, regional administrator of OPA, said that 11 members, or a quorum of the OPA advisory group, were present at the initial session, which met with Harry R. Booth, utilities counsel and chief of the public utilities branch, and Julius I. Rudolph, attorney, both of Washington, D. C. Robert A. Nixon, director of the transportation and public utilities division of OPA, was unable to attend.

Industry members indicated that the volume of telephone business may decrease due to the end of the war and if labor costs continue to rise, it would be necessary for the industry to apply for more rate increases.

The industry, it also stated, was expected to launch upon a substantial program looking towards rehabilitation and improvement of service in various parts of the country.

W. B. Clay, Hutchinson Telephone Company, Hutchinson, Minn., was elected chairman of the committee. F. S. Barnes, Rock Hill Telephone Company, Rock Hill, S. C., was elected vice chairman, and Clyde Bailey, executive vice president USITA, was chosen secretary of the committee.

Radio CHANNEL Applications

IN THE TELEPHONE FIELD

THE Federal Communications Commission's report of May 17, 1945, on the allocation of frequencies for non-governmental radio service in the spectrum from 25 to 30,000 megacycles opened the way for telephone companies to use radio channels as a supplement to wire lines. Up to now the pressure of the war emergency has prevented Independent companies from engaging in field trial experimental work to determine the full potentialities of radio in the telephone industry. With the war terminated it can be anticipated that many Independent companies will work out plans for setting up experimental radio channels to test the usefulness of radio as an adjunct to telephone wire lines.

Proposed Applications of Radio

THE following information may be helpful to those who have not followed closely the radio allocation developments and who may now be interested in possible applications of radio channels in their plants.

It it proposed to use radio links in furnishing the following types of services:

(1)—Special Emergency Service. This service as classified by the Commission would be used for emergency situations such as the following:

(a)—Initial restoration of service disrupted by emergency conditions. For example, use of one or more radio channels for toll circuits handling essential communications which, in large part, relate to the preservation of life and property.

(b)—Dispatching repair and construction crews to augment or restore wire communication circuits.

(c)—Providing additional circuits temporarily needed to augment the regular wire circuits for public convenience.

Special emergency service is not new in the telephone field but it has been handicapped in the past due to lack of clear channels. Several hundred transmitters are now kept on hand by various Bell System companies throughout the country for such emergency use.

It can be anticipated that the number of channels made available for this service and the greater demand for equipment will result in lower unit costs and the more extensive use of this service by Independent companies in the future.

(2)—Rural Radio Telephone Service. The Commission has recognized the potential utility of radio channels for serving "hard to reach" rural subscribers by allocating a number of frequencies for this service. It is presently contemplated that radio would be used for rural subscriber service primarily to supplement existing wire facilities in sparsely populated sections of the country where low subscriber density would make radio channels economically attractive.

It has been suggested that this service will be found most useful where the minimum distance involved is about three to four miles and the maximum distance does not exceed 20 miles. So far as is known no telephone company, either Bell or Independent, has as yet established any strictly rural radio channels, even on an experimental basis. An Associated Bell Company is using radio channels in the eastern part of the United States to render service to several small islands. These installations have many of the features of rural radio service as now contemplated, however, the cost of the equipment has been relatively high and lower costs will be necessary before radio links for rural subscriber service can be justified in the average Independent plant. If the demand for radio channels is sufficiently great so that the manufacturers can produce this equipment in quantity, lower equipment costs can be expected.

(3)—Urban Mobile Radio Telephone Service. This service would permit two-way communication between any vehicle moving in or near a city or town and any regular telephone subscriber. It is believed that this service would be valuable to public utilities, taxicabs, doctors, ambulances, delivery trucks, traction lines, city buses, and many others. It is also useful for communication between boats and tugs cruising in harbors or close off-shore.

Of the various services proposed, it seems likely that urban mobile telephone service will come into full use first. A number of associated Bell Companies have already filed application with the Federal Communications Commission for authority to install radio telephone equipment for the furnishing of urban mobile service. These applications have been filed primarily for the larger

F. E. Norris, chairman of the USITA Plant Committee, submitted the annual report of that committee in three sections: Small Office Dial Conversions; Comments on Rural Facilities Report; and Report on Radio Channel Applications in the Telephone Field, the latter prepared by B. C. Burden, Technical Consultant, Lincoln, Nebraska. Because of the tremendous interest in radio applications in the telephone industry, we present this section of the Plant Committee report in detail.

cities such as Baltimore, Chicago, Cincinnati, Columbus, Denver, Houston, Milwaukee, New York, Philadelphia, Pittsburgh, St. Louis, Salt Lake City and Washington, D. C.

The proposed vehicular telephone service which Bell System companies contemplate installing will use special operators in the larger cities to handle the radio vehicular calls. If a regular subscriber wishes to talk to the occupant of a vehicle equipped with radio telephone service he would dial or ask for the vehicular operator. The operator would then send out a signal consisting of a number of radio pulses which would operate an audible or visual signal to attract the attention of the occupant of the car. The car operator would respond by talking into a hand telephone connected to a mobile radio transmitter.

It is believed that initially such service will be rendered on a "push to talk" basis. This means that the party on the mobile transmitter end will need to operate a push button when talking and release the push button when listening. This simplifies the mobile equipment.

The transmitters proposed for the fixed stations will have a power of several hundred watts and will be capable of laying down a good signal to any part of a metropolitan area or its suburbs. In order to permit the use of low power transmitters in the vehicles the Bell companies plan to use several receivers at scattered locations in the metropolitan area. These receivers would be tuned at the frequency of the various radio equipped vehicles and the receiver nearest a radio equipped vehicle would pick up any transmitted signals and carry them to the main control terminal.

The Bell System contemplates three classes of urban mobile srvice, viz: (1) *General two-way service* between regular telephones and mobile units. Charges would be based on a three-minute initial period and the usual one-minute over-time period, (2) Limited two-way *dispatch service* between a particular telephone in a dispatching office and specified mobile units. A one-minute initial period and the usual one-minute overtime period would probably be the basis of compensation, (3) A one-way *paging service* to mobile units equipped with radio receivers but no transmitters.

It is the writer's opinion that the urban type radio telephone service should be rendered by telephone companies in preference to allowing this service to be developed by private industries. If each interested group develops its own facilities an uneconomical use of frequencies will result and such systems will lack the flexibility that accrue from common carrier operation. There is, of course, the practical problem of whether telephone companies, particularly those operating in the smaller towns and cities, will be economically justified in rendering this service in communities in which the demand for service would be inadequate to cover the annual charges on the necessary equipment.

It may be feasible to offer this service with the thought that the main transmitter could also serve for special emergency use, as for example, dispatching crews during storm conditions. If the main central office transmitter could be arranged for dual purpose use it would undoubtedly be somewhat easier to "provc-in" urban mobile service in the smaller cities.

Judging from its statements the Commission feels that the question of who should furnish communication service to mobile units (i.e., on a private or a common carrier basis) will depend largely on the future development of this type of service by the interested parties. The Commission has suggested in its final report that it may be necessary "to hold additional hearings to determine the best use to be made of the frequencies now proposed to be allocated for the purpose of providing two-way radio communication to the nation's highway users."

It is the writer's opinion that telephone companies (particularly the larger ones) should immediately consider the potential use of radio channels for the furnishing of urban mobile service and to take steps to set up plans for making trial installations. Lack of interest or activity on the part of Independent telephone companies in this new tool may result in private industries developing their own system with the public losing the advantages that would accrue from common carrier operation.

(4)—General Highway Mobile Radio Telephone Service. This service contemplates two-way communication between vehicles moving over the nation's trunk highways and regular subscriber telephones. Its chief use would be to serve truckers, commercial vehicles moving from city to city, travelling salesmen, etc. The furnishing of this type of service is complicated by the fact that the frequencies which have been allocated as well as power limitations would not permit transmission paths over distances of much in excess of fifteen to twenty miles. If highway mobile service is to be successful it means that a network of stations must be established at frequent intervals along our main trunk highways in order that the radio transmission path on any call to or from a vehicle moving on the highway would be relatively short. This requirement for a multiplicity of transmitting and receiving stations across the nation will, of course, have an initial retarding effect on the development of this service. However, it seems certain that as time goes on some coordinated plan may be worked out by the Bell and Independent companies whereby the substantial investment required to finance the overall nationwide network of radio terminals needed to provide highway mobile service might be worked out. At this time so far as is known no definite plans have yet been set up for the furnishing of this service.

(5)—Short Distance Toll Channels. In its appearance at the FCC allocation hearings late in 1944 the United States Independent Telephone Association showed a need for radio channels for short haul toll use. In its final report the Commission had little to say regarding the use of radio channels for short distance toll telephone service. However, it did allocate on a shared basis certain channels for this service.

It is believed that applications to the Commission which show good justification for the use of radio channels for short haul toll purposes in lieu of wire lines, particularly where these channels can be used without interference to other sharing services, will be looked on favorably. The principal application of short haul toll channels would appear to be situations in which only one or two toll circuits are required between points located at distances up to twenty or thirty miles and where a substantial portion of the pole line carries only the toll wires which would be displaced by the radio channels.

(6)—Long Haul Radio Relay Channels. The FCC proposes to assign on an experimental basis frequencies from six different bands (all above 1200 mcs) for radio relay services. The Bell System has already made plans and is building equipment to install a trial radio relay installation between New York and Boston. It will make use of directed radio beams operating at ultra-high frequencies. The radio relay stations will be approximately thirty miles apart.

Courtesy of Collier's, Crowell-Collier Publ. Co. and Sidney Hoff

"Try it on, lady—there's a telephone booth in the candy store"

COLLIER'S SYDNEY HOFF

Independent companies in some areas may have limited use for radio relay type toll networks. Activity in this field can be expected to follow rather than precede the experimental work with radio channels for the other uses which have been mentioned.

Economic Considerations in Connection with Radio Applications

THE use of radio channels in the telephone field for the various applications listed above creates a number of economic and technical problems. From the standpoint of economics, time will be required to determine if radio channels, viewed on an annual charge basis, can be justified in lieu of wire lines for furnishing some types of telephone service. If it develops that telephone service can be furnished to certain types of rural subscribers in sparsely settled areas, by means of radio channels at substantially lower annual charges than by ordinary rural lines then certainly full use should be made of radio for this purpose.

Although the initial capital investment for radio equipment necessary to supplement, if not entirely replace a rural wire telephone network, may be high such arrangement should have the distinct advantages of lower maintenance costs (assuming the radio equipment is relatively free from trouble) and greater flexibility. The flexibility would result from the ease with which rural telephone radio subscribers could be connected or disconnected from a telephone exchange as compared to the partially lost investment which often results when a spur line subscriber decides to abandon his telephone service. The freedom from storm hazards should enhance both rural radio telephone service and short haul toll radio service as compared to wire lines which are much more subject to the elements.

Whether or not a telephone company should be unduly influenced by the absence of net revenue from the furnishing of the new radio telephone services which can be offered only by means of radio channels is a question which can only be answered by individual companies. Certainly the small single unit companies cannot afford to establish these new services without some assurance that they will at least break even on the required investment. The larger companies are (at least on a trial basis) in a better position to establish the newer services and to absorb any operating loss that may result in the initial period. It seems certain that if the telephone industry does not develop the new services, private interests will.

Principal Technical Problems

ONE of the principal technical problems that confront the industry in applying radio channels to either the new or the old services is the matter of satisfactory wave propagation. That is to say, the problem of getting an adequately strong and reliable radio signal from the telephone office to the subscriber and from the subscriber back to the telephone office.

The frequencies which have been assigned or allocated to telephone companies for the various radio telephone services are largely in the range which operate on a *near line of sight basis.* That is, these frequencies require a fairly uninterrupted path between the transmitter and the receiver. Large buildings, hills, mountains, etc., all tend to intercept or cut off the radiated wave travelling from transmitter to receiver.

In most commercial applications of ultra-high frequency radio the transmitting and receiving antennas are placed on high structures which in most cases, provide the necessary line of sight path. It is apparent that it will not be feasible to furnish each rural subscriber with a 300-foot tower in order to elevate his transmitting and receiving antenna to a height sufficient to give the necessary near line of sight path.

Experiments which have recently been conducted by several police departments over the country as well as some of the large radio laboratories have shown that the problem of a near line of sight path is not quite as severe as had at first been assumed. Due to reflection effects indirect wave path signals seem to extend beyond the near line of sight paths and to permit fairly good coverage with practical antenna heights. However, it can be anticipated that the telephone companies attempting to use the ultra high frequencies for radio channels will in some instances encounter "dead spots" and other unusual conditions which might make the use of a radio channel in a particular situation unsatisfactory.

Another problem is the matter of power supply. A fifteen or twenty-five (RF) watt transmitter such as would be required at a rural radio telephone would probably require from fifty to one hundred watts of a-c power from the power source. If the subscriber's residence is equipped with commercial power the power problem is, of course, solved.

Where no commercial power source is available it is necessary to resort to batteries. Because of the necessity of keeping the receiver in a receptive condition to receive incoming calls the battery drain would be substantial and would present a problem. One solution might be to operate such rural stations on a *one-way signalling basis.* That is, a rural station would

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Personalities

Mark R. Sullivan, former vice president of A.T.&T., is the new president of the four Chesapeake and Potomac telephone companies that serve Maryland, Washington (DC), Virginia and West Virginia, and succeeds **Lloyd B. Wilson**, who becomes chairman of the board of directors of the four companies.

●

Irvin Clemens is the new manager of the Iowa Telephone Company's exchange in Glidden, Iowa, busy with new outdoor wiring work, new switchboard installation and new phones to be installed.

●

Robert B. Stokes, 39, revenue accountant for the Southwestern Associated Tel. Co. at Lubbock, Texas, died September 4. He is the son of **R. J. Stokes,** district manager for the Gulf States Tel. Co. at Kaufman, Texas.

●

Major General **William H. Harrison** has been elected vice president in charge of operation and engineering of A.T.&T., the position he held prior to 1940 when he went on leave of absence to the WPB and later to the U. S. Army.

●

Franklin T. Woodward, who retired last June 7 as General Patent Attorney of the Western Electric Co. after 37 years of service with the Bell System, died Sept. 17 at his home in New York City. He was 63 years old.

●

R. A. Phillips, vice president and general manager of the Central Telephone Company, Sioux Falls, S. D., and also of Central Electric & Gas Company, was elected a director of the latter company at a recent stockholders' meeting. **Judson Large,** secretary of the two companies, was also made a director.

●

Claude Custer Rose, patent attorney for A.T.&T. died September 4 at his home in New York.

C. R. Burrows of the radio and television research department of Bell Telephone Laboratories, has been appointed Professor of Electrical Engineering and Director of the School of Electrical Engineering at Cornell University. He assumed his new duties about Sept. 1. Dr. Burrows had been associated with the Laboratories since 1923.

●

Lloyd B. Wilson, former president of the four Chesapeake & Potomac Telephone companies, has been elected chairman of the boards, effective October 1.

R. C. Krueger

R. C. Krueger, advertising manager of Kellogg Switchboard & Supply Company, Chicago, has been appointed manager of the firm's new Koiled Kord division. Mr. Krueger will direct national distribution of all the Koiled Kord division's postwar products.

●

C. Bradlee Hunt, 91, died recently at his home in Brooklyn, N. Y. For 41 years until his retirement in 1934 he conducted the advertising campaigns of the New York Telephone Company and its predecessor, the Metropolitan Tel. & Tel. Co. of N. Y.

Adolph Koch, 75, still climbs poles and services a number of country lines out of Garretson, South Dakota for the Garretson Cooperative Telephone Company, but he is thinking of retiring when he can get someone to take care of the service work on his rural lines.

●

Clifton W. Phalen is the new vice president of public relations at the New York Telephone Company. **Erwin R. McLaughlin,** formerly general plant manager for the Manhattan area, succeeds Mr. Phalen as vice president of personnel. The changes were effective October 1.

●

Charles F. Greene is the new Atlanta representative of the Storage Battery Division of Philco Corporation. The announcement was made by **J. G. Green,** assistant general manager.

●

Llewellyn Rogers, Jr., is the new district service manager of the Elgin and Joliet territory of Illinois Bell Telephone Company. **W. F. Weidemann** succeeds Mr. Rogers as manager of the Joliet area.

●

Leighton H. Peebles, who concluded September 30 with the termination of the WPB Office of War Utilities his successful leadership of the WPB Communications Division, is joining the International Telephone & Telegraph Corporation on November 1.

●

Eugene H. Merrill, former Utah Commission chief engineer and telephone section chief of the WPB Communications Division during the past three years, will leave the U.S. in a few weeks for Austria to become associated with the American Control Commission of General Mark Clark as a public utility expert on financial matters and rates.

Before going overseas he will complete an assignment with the Utah Commission on the Mountain States Tel. &. Tel. intra-state toll rate case.

USITA Board of Directors Meet

Members at the USITA Board of Directors Meeting, October 2-3, in Chicago. Top row, L to R: B. C. Schweitzer, Kelley McNish, A. O. Black, F. S. Barnes, Ray Dalton, A. N. Johns, R. B. Still, R. A. Phillips, Don Mong, Oscar Burton and F. R. McBerty. Center row, L to R: S. L. Tucker, W. M. Angle, T. S. Gary, J. R. Porter, H. V. Bozell, H. M. Engh, E. M. Blakeslee, R. E. Williams, R. E. Shotts, Foster McHenry and R. W. Siemund. Sitting, L to R: Walter Dakin, V. E. Chaney, J. H. Agee, F. E. Bohn, W. C. Henry, USITA'S new president; J. P. Boylan, retiring president; Carl Brorein, treasurer; B. L. Fisher, C. D. Manning, A. L. Hart and P. M. Ferguson.

Wm. C. HENRY *to lead Independents 1945-46*

THE board of directors of the United States Independent Telephone Association met in Chicago, October 2-3 for the purpose of conducting regular business of the Association and the election of new Association officers and board members. Col. William C. Henry, general manager, Northern Ohio Telephone Co., Bellevue, was elected president succeeding John P. Boylan, president of the Rochester (N.Y.) Telephone Corporation.

Other officers were: 1st vice president, R. A. Lumpkin, Mattoon, Ill.; 2nd vice president, V. E. Chaney, Chicago; Clyde S. Bailey, executive vice president, Washington; C. D. Brorein, treasurer, Tampa, Fla., and secretary, F. D. Ridings, Washington.

Four vacancies on the board were filled during the meeting. Selected as new directors were: Foster McHenry, general manager, Capital City Telephone Co., Jefferson City, Mo.; Don Mong, vice president, Investors Telephone Corp., Newton, Ia.; Walter Dakin, president, Commonwealth Telephone Company, Madison, Wis., and Roy W. Siemund, president, Leich Sales Corporation, Chicago. These new directors replace C. C. Deering and Leland Wright, deceased, and E. W. Rodormer and J. F. O'Connell, resigned.

Wm. C. Henry

The eight directors whose terms would have normally expired were held over until annual meeting of the membership. The board meeting was one of the most harmonious ever held with 33 of the 36 directors in attendance. The address of the retiring president, Mr. Boylan, was carried in full in our October 1 issue.

In his report on the Association's year, Executive Vice President Bailey discussed general association activities; importance of state telephone associations; activities of governmental agencies affecting telephone companies, including the Board of War Communications, WPB, OPA, National Telephone Commission (on wages); wage legislation, the U. S. Supreme Court decisions on U. S. surcharges, and rate increases. Mr. Bailey submitted statistics on the Independent telephone business and took a look ahead in the future of the postwar telephone industry.

The board received reports from all standing committees, copies of which are being mailed to all members by the Association.

The 1946 meeting dates were set, with the annual Spring Conference to be held at the Edgewater Beach Hotel on April 15, 16, and 17, 1946.

The annual convention of USITA was officially set for Chicago, October 14, 15 and 16 at Stevens Hotel.

With wartime ban on exhibits relaxed by the Association, the annual meeting will be replete with banquets, exhibits and all the trimmings. The board also endorsed pending legislation to create a small business finance corporation, empowered to lend money to small and medium sized enterprises up to $250,000.

The executive committee of USITA will now consist of: new members W. M. Angle, Rochester (N.Y.); John H. Agee, Lincoln, Nebr.; A. N. Johns, San Francisco. Those whose terms did not expire on this standing comcommittee are: Mr. Boylan, F. E. Bohn, Ft. Wayne; H. V. Bozell, New York; R. A. Lumpkin, Mattoon, Ill.; C. D. Manning, Chicago; C. F. Mason, Santa Monica; F. R. McBerty, Galion, O., and R. A. Phillips, Sioux Falls, S. D. The board authorized the officers to negotiate lease extension on offices occupied by Washington headquarters in the Munsey Building for a term of three years from January, 1946. New committees for the coming Association year will be carried in a subsequent issue of this publication.

In this issue we are endeavoring to bring you condensations of a number of committee reports.

The new officers of USITA, elected October 3 at the Board of Directors' meeting. From L to R: Treasurer Carl Brorein, president, Peninsular Tel. Co., Tampa, Fla.; Vice President V. E. Chaney, executive in charge of Gary Group telephone operating companies, Chicago; President Wm. C. Henry, general manager, Northern Ohio Tel. Co., Bellevue; Executive Vice President Clyde S. Bailey, Washington; and Secretary Floyd Ridings, Washington. R. A. Lumpkin, first vice president, was not present (in Europe on a government mission).

New directors of USITA elected at the Board of Directors Meeting in Chicago, L to R: Walter Dakin, president, Commonwealth Telephone Company, Madison, Wisconsin; Don Mong, vice president, Investors Tel. Corp., Newton, Iowa; Roy W. Siemund, president, Leich Sales Corporation, Chicago; and Foster McHenry, general manager, Capital City, Tel. Co., Jefferson City, Mo.

Toll Compensation Committee Report

A TENTATIVE plan for a nationwide line-haul weighting scale or curve for the evaluation of toll line costs and circuit utilization relationships of Independent companies when prorating the toll business especially intrastate traffic, interchanged with Associated Bell companies, similar to the treatment in compensating Independents for Long Lines traffic, was presented in the report of the USITA Toll Compensation and Settlement Committee, made public after it had been submitted to the Association's Board of Directors. The report also dealt with the hotel surcharge situation and proposed that Independtnt companies should ask hotels to give it a segregation of its business calls and those calls made by hotel guests so as to apply the 15 percent commission to the hotels on interstate long distance calls.

The report was submitted by E. M. Blakeslee, Committee Chairman. Other members of the committee are W. B. Clay, A. L. Hart, Col. William C. Henry, who just rejoined the body after his lengthy service in the Signal Corps, W. J. Herrman, J. T. Naylor and R. A. Phillips.

In regard to the hotel surcharges, the report stated that following the A.T.&T.'s agreement to pay hotels a 15 percent commission on interstate and foreign toll messages by hotel guests, several of the Associated Bell Telephone companies have informed Independents that if any Independent is required or concludes to pay a commission they would allow the Independent company such commission as an additional compensation before prorate computations. This is subject to the limitations that no more than 15 percent would be allowed and that the 15 percent commission plus the compensation which the exchange (Independent exchange) now receives for its participation in the toll business does not exceed 100 percent of the revenue derived from the total interchanged toll business. Mr. Blakeslee's committee recommended that Independent companies devise a brief form of contract for presentation to hotels covering payments for commission on guest calls. This contract should state that the hotel agrees not to assess a surcharge on any long distance calls of guests. In the case of the hotels' segregation of business and guest calls, the Independent company would employ this record as the basis for commissions to the hotel and to recover the amount of the commission from the Associated Bell company.

Principles for Weighting Plan

THE line-haul weighting plan, now in a tentative form of study, was evolved from three general understandings or principles after a two-day session between the USITA committee and A.T.&T. representatives in mid-September. These comprised: (1) In general, full efficiency and economy in the handling of toll traffic are not realized over the short routes of the Independent company to the same extent as over the longer and more heavily loaded routes of Associated Bell companies and the Long Lines System and line-haul "weighting" should give primary consideration to these facts; (2) While individual company by company cost studies would result in the most equitable distribution of interchanged toll revenues, these cost studies would be expensive and time-consuming and the objective can be accomplished through the use of broad averages or empirical formulae; (3) Long Lines traffic and costs, Associated Bell interstate

(Please turn to page 54)

Conducted by the
Observer and his Gang

THE Observation Tower

If you have observations or even a friendly bit of argument suitable for use in this column, you are invited to send them along, which automatically makes you a member of the Gang. You will be anonymous—no names of telephone people or telephone companies are used in this column. Address "The Observer," in care of TELEPHONE ENGINEER AND MANAGEMENT.

Well, Let's Have That Kind Next Year!

GANG Member No. 17 has been moaning to us about his homesickness for a real old time, prewar vintage of national telephone convention. One, he says, with all the trimmings of the days gone by.

"I want to go to a telephone convention," says he, "where all the rooms on the floor are filled with manufacturers' exhibits, and there's a salesman peeking out from behind every potted palm in the hotel ready to buttonhole me and drag me somewhere to see his company's latest contraption, and do his darndest to get me signed up to an order for something. I just want a chance to argue with a salesman again, and to run down his equipment in a loud, jeering voice, and tell him how much better and cheaper his competitor's stuff is—and, in general, to make him crawl. For five years I've been doing the crawling, and I want a chance to prove again, if I can, that I'm a man and not constitutionally a mouse!

"I want to go to another old-fashioned convention," says this Gangster, "where things happen just like they used to—you know, where you always have to pour a certain number of the gang into their hotel rooms every night, and it takes two strong-armed guys to get enough people in the assembly room to start the meetings with, and somebody has to go around with a blackjack to make the manufacturers shut up their exhibits so you can have a meeting—and one where the women are there, too—God bless 'em! They'll be running around hunting their husbands, and the husbands'll be holed up in some room somewhere with a gang of fellows, trying to make somebody think they're having a committee meeting . . ."

At this stage we implored Gangster No. 17, who was almost weeping, to stop, because we were about to break down, too.

"Just one more thing," insisted this Gang Member. "I want to go to another Pioneers banquet, where the comedian in the stage show makes some cracks about the guy the directors elected president, and they give you a little piece of chicken and a little piece of ham, and you cuss about the location of the table you've drawn, and . . ."

But we could stand no more. So we gently ushered him out of the room, and he went down the hall, sobbing softly as he disappeared.

We want to go to that kind of convention again, too. Don't you?

How Much Do You Pay For It?

IN the matter of telephone rates, we heard a discussion the other day in which a telephone man of long experience expressed some opinions that seem to us to be sound.

A lot of small companies, says this Gangster, probably hold back on asking for higher rates, when they badly need more revenue, because they are afraid the reaction of their subscribers will be unfavorable. The management of the telephone company does not want to be criticizd by fellow townspeople —many of whom are personal friends—for asking for higher rates.

That, says this Gang Member, is wrong. People will think a lot more of you if you stand up for what you have to have in order to run your business successfully and supply good service to your customers, than if you do not do that. Further, he says, relatively few people know what they are paying for things, anyway.

If you want to test that out on telephone rates, he says, then the next time you are in a gathering of a number of people, circulate around and ask a few of them, one by one, what rate they pay for their telephone. It will be strange, he says, if more than one or two of them really know what the rate is for their telephone.

How much, he asks, did you pay a gallon for your fuel oil last Winter? Or a ton for your coal? How much a pound is sugar now? What's the kilowatt-hour rate for your electric current?

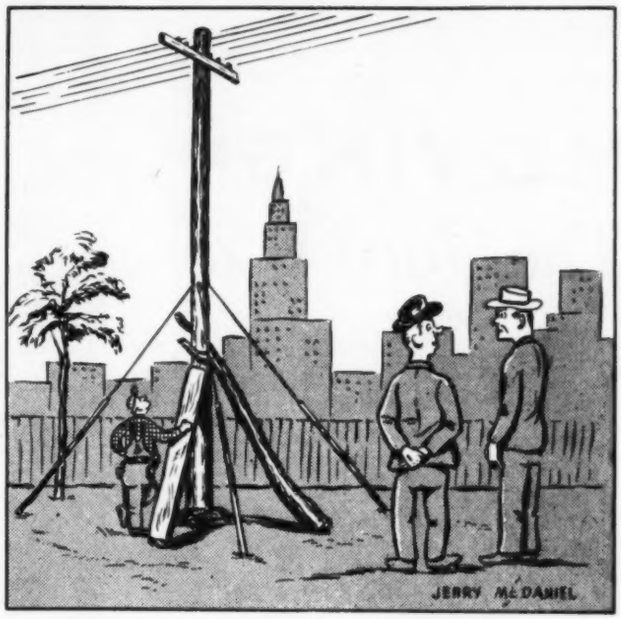
What do you do when your coal and oil dealer tells you that you'll have to pay a little more this year? Do you go into a tantrum and bawl him out? No. He tells you that wages and other costs have gone up. Well, you know they have. So you kid him a bit and playfully call him a first-class robber—and pay the new price.

Why should anybody go into a dither, asks this Gangster, because telephone rates need to be higher—in the face of all the increased costs—than they have been? The answer is, he thinks, that they won't, if the telephone company will explain why the rates need to be higher.

"In fact," he says, "I honestly believe that in a lot of cases the utility companies themselves are more afraid of higher rates than the customers are. The utilities do a lot of yelling about how cheaply they supply their services. Maybe they overlook the fact that the customer is more interested, in the case of telephone rates, in how good the service is rather than how cheap it is."

We think this Gangster has got something there. Anybody can look at the statistics of the telephone business and see that a large number of companies, particularly small companies, are now trying to supply good telephone service with inadequate revenues. Their rates are simply too low to allow them to supply good service. We'd be willing to bet that most telephone subscribers would prefer to pay more money and get good service, than to pay less and receive indifferent service.

This Gangster may be very right. Maybe some telephone companies are more afraid of higher rates than the subscriber is.



"Elmer sure is thorough!"

Uniform Systems of Accounts

GANG Member No. 207, who is the head accounting man for a large telephone company, has been holding forth to us on the subject of telephone accounting. He admits to being of an age where he is a bit mellowed, so to speak—and says he can look back on a lot of things philosophically.

"One of the best things that ever happened for the telephone business," he says, "was the inauguration for it of the uniform systems of accounts prescribed by the various commissions. We never really realized how valuable they are to the business until we installed them—sometimes over our protests—as regulatory commissions were created, years ago, in one state after another."

"Now, I don't agree one hundred percent, even yet, with every single thing in prevailing uniform systems of accounts; I think, for instance, that the distribution of expenses and some other items could be improved somewhat, and perhaps simplified—especially for the smaller companies. But I agree that, without uniform systems of accounts, the accounting records of the telephone business would be chaotic."

This Gangster thinks that the management of many small businesses—telephone and otherwise—fail to give due weight to the business value of complete and proper accounting.

"The only way you can know all you need to know about your business," he says, "is to keep books on it properly."

We won't do any arguing about that, because we agree with it. Of course we realize that there is a lot more to keeping books for even the smallest telephone company than simply making entries on a ledger—you have to know what entries to make, and to know that you have to have records of what has been done throughout the business. But even then we believe it would be greatly to the advantage of every small telephone company if it kept its books according to the uniform system of accounts prescribed or recommended to it by its commission.

Accounting is fundamentally, of course, a record of what has been done in the business. But it is also a record that tells an astute manager what to do in the future—or what not to do.

Ask 'Em to Remember the Telephone

IT seems to us that now, with thousands upon thousands of new homes due to be built within the next few years, is a most appropriate time for the telephone industry to persuade home builders to decide in advance where they want their telephones located, so that the interior wiring can be done as the house is built.

Large telephone companies have done some of this in the past, particularly by appealing to architects to keep telephones in mind and to cooperate with the telephone company in seeing that the interior telephone wiring was done during the construction stage where it could be done easily.

A trouble with this whole situation is that people are so accustomed to having a telephone installed, in normal times, just when and where they want it, that they give no thought to the difficulties of fishing telephone wires through between-wall spaces and under floors and so on. They have to plan in advance as to where the electric wiring will go, and where its outlets are to be—but they usually think of the telephone about two days before they move it.

Maybe this is something the telephone associations should take under their wings—a sort of general crusade to make home builders telephone-minded before they build the house.

Anyway, if anything is going to be done about it, now's the time to start doing it.

"Wo Dood It!"

WE sat at a luncheon table recently at which there were men from six different industries. Each fellow's talk seemed to be mostly about the troubles of his own industry—and how much worse they were than the troubles of any other industry.

We put in our oar about the troubles of the telephone industry—and we considered them, and said so, to be the worst of all.

Then gradually it dawned on us that these guys weren't bragging about their troubles. What they were bragging about was the way they overcame their difficulties!

We also woke up to the fact that that was mostly what we were vociferating about ourselves.

We have the feeling that everything is fundamentally all right in a country where difficulties are merely something to be overcome—and where a man's pride is in his ability to overcome them!

THE OBSERVER

MOVING → *The Hard Way*

IF you're moving this fall, the Hackensack Plant people of New Jersey Bell, can tell you how—the hard way. For the past year they've been working on one of the biggest projects undertaken recently—a $25,000 job of rearranging outside plant facilities in connection with a wholesale house-moving project in Rutherford, N. J.

It was necessary to clear 125 houses which blocked a right-of-way, and move them to new locations in Rutherford and Lyndhurst. This was one of the biggest housemoving projects in New Jersey, and a big wartime problem for the Hackensack plant people, who were charged with raising and relocating outside plant to accommodate the movers.

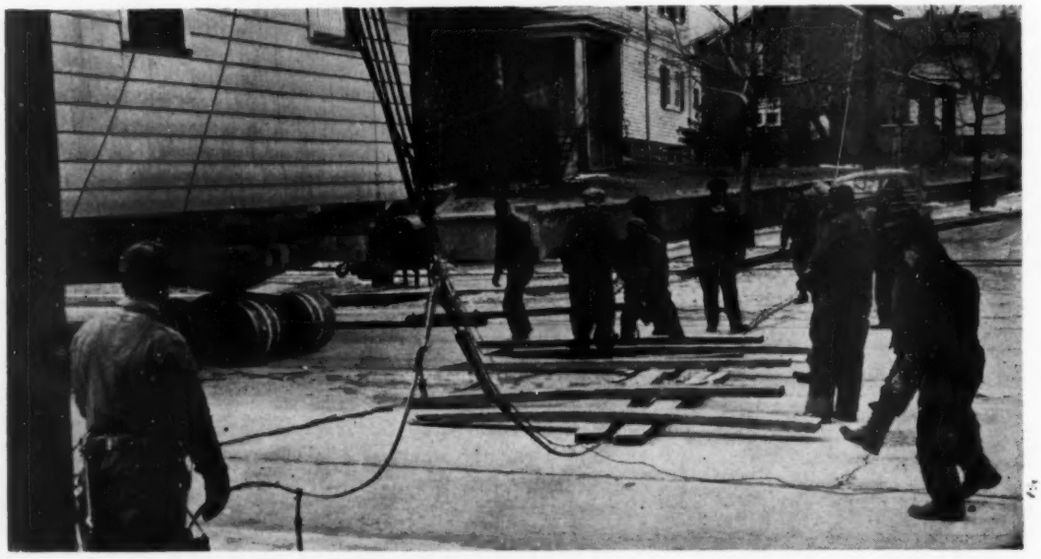
The cables, normally placed at a height of 18 feet above the ground, were raised to heights of 38 feet—sometimes 40 and 42 feet—to permit the two-story houses to pass underneath. As each house was rolled on to a trailer to be moved to its new location, lengths of wire and cable were spliced in to permit raising the existing construction. Tall poles, some of them 45 and 50 feet high, were lashed to the existing poles and the crossarms raised to the top of them to form a "doorway" through which the houses could pass. At some locations, in order to prevent cutting into a cable, several sections of large cable were lowered to the ground and protected by platforms of heavy planks to permit the house to pass over it.

Telephone men relocate wire and cable as one of 125 houses is moved to clear the right of way for a proposed new highway. A temporary pole has been lashed to the present pole and the crossarms raised to form a "doorway" through which the house will pass.

Careful planning and cooperation with the movers made it possible to move two or three houses or more a week, without obstructing the normal flow of traffic through the streets or damaging the trees or town property.

Under C. F. Zurheide, line foreman, many gang days were spent on the job.

Carried on concurrently with the normal work of the department, the house-moving has continued for a year, with only a hurricane calling the men off the job; and we believe the New Jersey Bell, Hackensack plant people deserve commendation on the splendid job they are now bringing to completion.



To prevent cutting into the cable, the Hackensack, New Jersey plant men have lowered it to the ground and protected it by a platform of heavy planks. The house, which has just passed over the cable, weighs 70 tons.

Courtesy New Jersey Bell

Telephone Engineer's RADIO COURSE FOR TELEPHONE MEN

Chapter 7---Section 2

Phenomena of Radio Transmission

By B. C. BURDEN
Technical Consultant
Lincoln, Nebraska
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Antenna Considerations

IN dealing with antennas we are concerned with five principal factors: (1) the type of polarization, (2) the angle of radiation, (3) the directional characteristics and (4) the ability to absorb power from the transmitting equipment.

The effect of polarization on the efficiency of the transmitting and receiving antennas is still under experimental investigation.

In general, it is recognized that at frequencies above 30 megacycles the transmitting and receiving antenna should have the same type of polarization. That is, if the transmitting antenna is vertically polarized the receiving antenna should also be vertically polarized. Fig. 100 illustrates the two simplest types of transmitting antenna for the two kinds of polarization. The antennas shown are known as simple vertical and horizontal half-wave antennas and sometimes known as *dipole antennas*. The *angle of radiation* which should be employed in a given radio installation depends largely on the frequency and distance to which the signal is to be transmitted. For ionospheric wave transmission, high angle radiation may be desirable. But in dealing with the higher frequencies only the ground wave is of practical interest, hence low angle radiation is desirable. The angle at which a given antenna system radiates energy effectively is controlled by the type and general dimensions of the antenna. Less importance is paid to the angle of radiation in connection with high frequency antenna than to the problem of directivity.

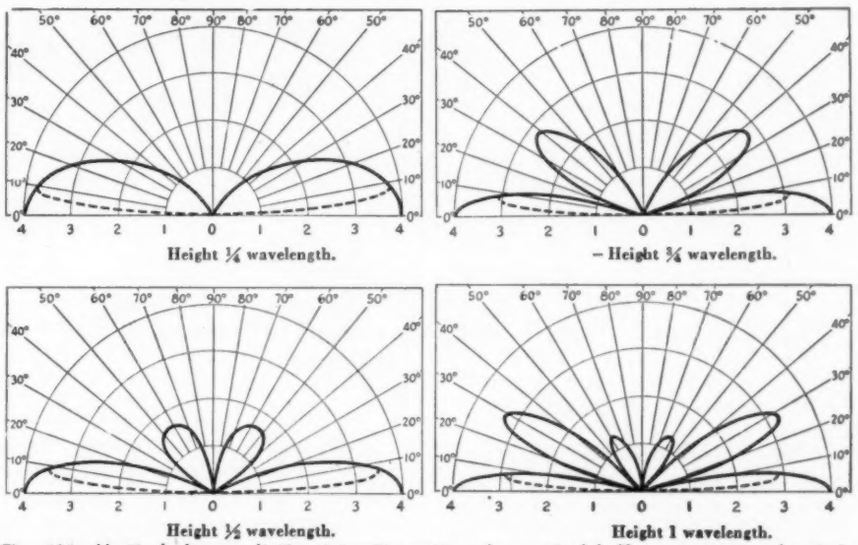


Fig. 101—Vertical-plane radiation intensity pattern for vertical half-wave antennas located at various heights above ground. The height is measured from the center of the antenna. The dotted line shows the high attenuation which takes place for the very low angle radiation due to ground losses. The horizontal field intensity pattern for a half wave antenna is approximately a circle. (Courtesy American Radio Relay League)

Type T Antenna Best Suited to Telephone Field Applications

IT is important that maximum signal strength be radiated in a given direction for point to point communication service. The use of directional antennas means that either lower power transmitters can be used or that a stronger signal can be laid down to the receiver. When the frequencies employed are relatively high, it is comparatively easy to provide compact directional antenna systems at relatively low cost. An exception to this statement is, of course, in connection with automobile installations in which the antenna must of necessity be a simple vertical radiator.

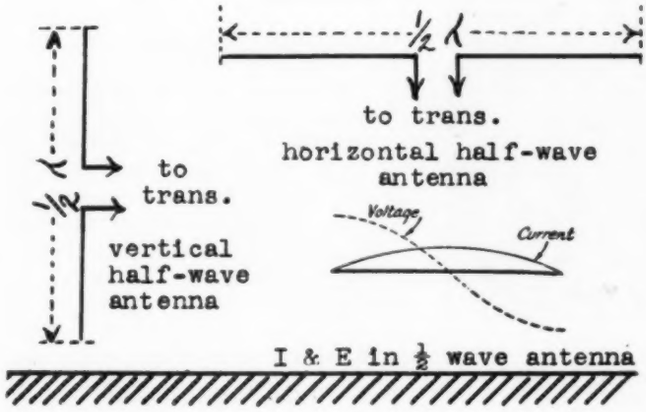


Fig. 100—Simple half-wave vertical and horizontal antennas.

The angle of radiation is materially influenced by the height of the antenna above ground. This is due to the fact that the reflected ground wave will reinforce the space wave to best advantage when the antenna is at least one or more wave lengths above ground. This fact is brought out in a previous paragraph in which it was stated that the minimum optimum antenna height is somewhat higher than

would be required if only line of sight (or near line of sight) considerations were taken into account.

In general, a minimum antenna height of 50 feet is desirable for the frequencies under consideration for telephone use. It might not be possible to obtain this antenna height at rural radio-telephone subscribers' stations in all cases, although light weight masts which are now available may be found worthwhile for such subscribers' stations, particularly those located a considerable distance from the central office. The antenna required at the central office should be amply high to insure good coverage in all directions.

Antenna Patterns

THE performance of an antenna with respect to directivity is shown by a horizontal field strength pattern. Fig. 101 illustrates such a pattern for a simple half-wave antenna. It will be noted that minimum radiation takes place along the axis of the antenna and maximum radiation at right angles to it.

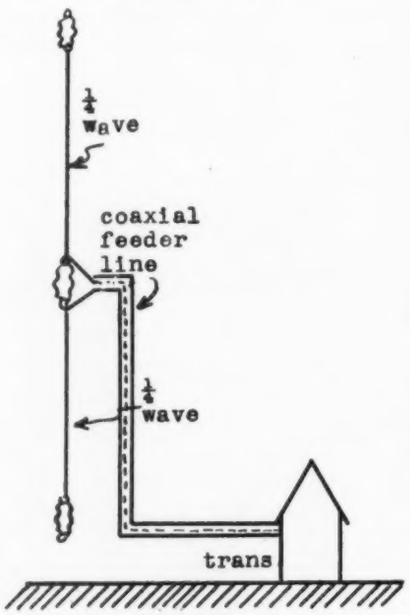


Fig. 102—Simple half-wave vertical antenna with center feed.

Types of Antennas

FOR use on frequencies above thirty megacycles the simplest type of antenna system is a vertical half-wave radiator as shown in Fig. 102. An antenna of this type permits energy from the transmitter to be fed into its center over a low impedance transmission line. The waves produced by this antenna are vertically polarized. A single pole or mast is adequate as a supporting structure. The principal disadvantage of the simple vertical radiator is its lack of directivity. If a half-wave antenna is placed in a horizontal plane, it polarizes the wave horizontally and tends to have slight directional effects.

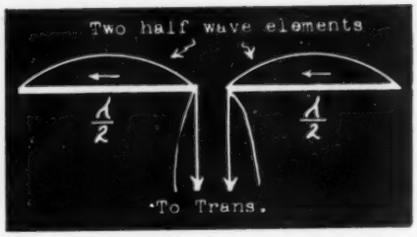


Fig. 103—Collinear type directional antenna.

Collinear Antenna

A MODIFICATION of the simple vertical dipole consists of the use of two vertical center fed antennas each one half-wave in length as shown in Fig. 103. This system (called *collinear*) increases the low angle radiation and is fairly directive in the two directions broadside to the antenna as shown in Fig. 104. An antenna system of this type has a gain, as compared to the simple types, of 1.5 to 3.0 db, depending on the spacing between the centers of the two elements which make up the antenna.

The Broadside Array

FIG. 105 illustrates what is known as a *broadside antenna array* in which three half-wave elements are used. With the elements at half-wave length spacing, this antenna will have a gain of approximately 5.5 db. Antennas of the type just described are usually known as a *directive array with driven elements.* They are two-directional in character, i. e., they radiate energy of approximately equal magnitude in two directly opposite directions from the antenna.

Need for Uni-directional Antennas in Telephone Field Applications

MOST telephone applications, because of their point to point character, will require antenna systems which concentrate the radiated energy in a single direction and in a rather narrow beam. There are various types of antenna systems which will accomplish this purpose. One commonly used method on the higher frequencies is to use *parasitic elements* in conjunction with the regular antenna elements. Parasitic elements are connected inductively to the regular antenna and either *direct or reflect* the energy from the active antenna toward the desired direction. They operate by virtue of the current induced in them from the working antenna.

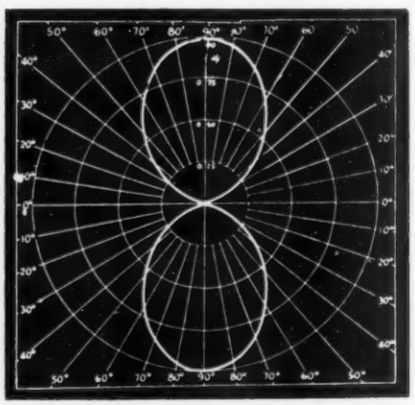


Fig. 104—Pattern for antenna shown in Fig. 103 (Courtesy American Radio Relay League).

The basic difference between a *director* element and a *reflector* element is shown in Fig. 106. It will be seen that the director element assists radiation in the direction from which it is received from the antenna. A reflector element reflects energy back toward the direction from which it is received. Both director and reflector elements are often employed in the same antenna in order to get a maximum concentration of energy in a given direction. Whether or not the parasitic elements operate as directors or reflectors depends on their resonant characteristics and their spacing from the active antenna elements.

The gain and directivity from a parasitic type of directive antenna depends on the number of elements employed, and in general is improved by the use of a number of elements. The spacing between the elements is usually a fraction of a wave length. Multi-element directive antennas are critical with respect to the phasing and tuning of the elements.

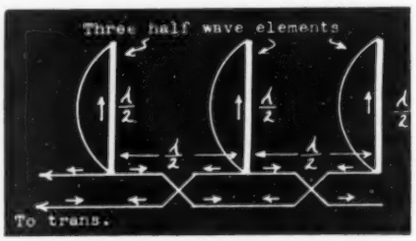


Fig. 105—Broadside antenna array.

In working with telephone radio relay systems the antenna structure should be one which will give a maximum radiation in one direction and minimum radiation in the other. This is important to prevent coupling between receiving and transmitting units which may be using the same frequency for opposite directions of transmission.

The Rhombic Antenna

THE *rhombic antenna* has been used with considerable success in connection with high frequency radio channels. It is diamond shaped and represents a closed loop as distinguished from other types of antennas previously discussed which have open ends. The rhombic antenna is distinguished by being relatively long with respect to the transmitted wave and it has the ability to concentrate energy along a given direction in a very

(Please turn to page 69)

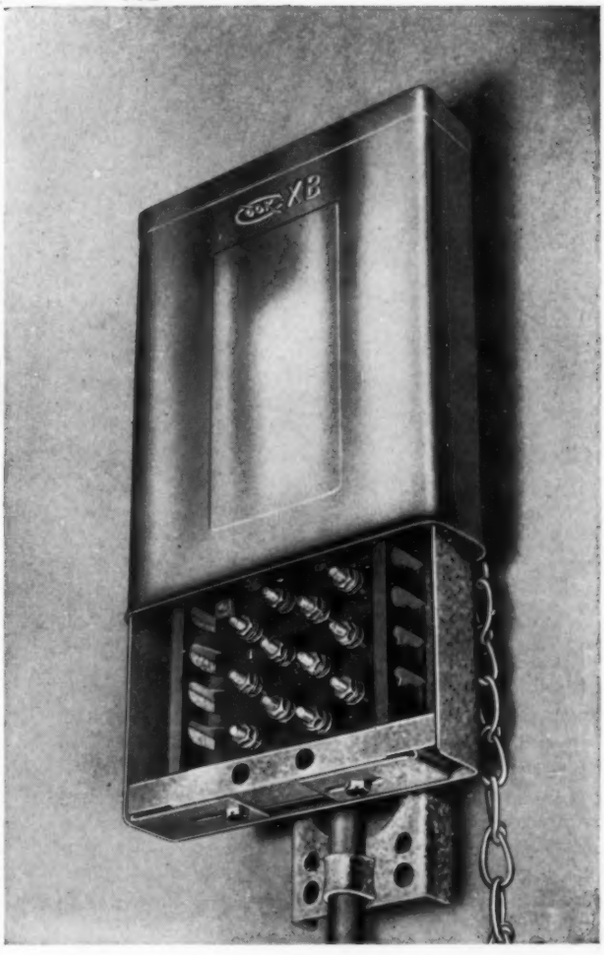
TYPE

XB

CABLE TERMINAL

by

COOK



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Investigate Automatic Electric equipment for **your** specific operating conditions, and you find every feature you want to provide modern telephone service efficiently and economically. Through more than fifty years of cooperation with telephone operating companies, this organization has pioneered in automatic telephony—continually meeting new problems and solving them by the addi[tion] of s[uch] to the new requirements.

That is why Automatic Electric equip[ment] too number of standard operating featu[res], and optional features to solve specific [service] p operating features, like all Strowger [equipment] easily added to existing exchanges—[and] all a We invite you to check these state[ments] ag too, how many of these features [were] A products of the technical skill whic[h] has ke ahead in automatic telephony.

Party-Line Service — With automatic selective ringing for up to 10 stations per line, and automatic code ringing for up to 20 stations per line. (An Automatic Electric "first")

Automatic Service on Ground-Return Lines—Including universal pulsing circuits which may be used to serve either metallic or ground-return lines. (An Automatic Electric "first")

Dial Tone—To notify the calling party that dialing may be begun.

Ring-Back Tone—To inform the calling party that the called line is being rung. (An Automatic Electric "first")

Quick Ring-Cut-Off—Halts ringing of called bell instantly—in ringing or silent period.

Automatic Intermittent Ringing—Insistent, automatically interrupted operation of calling signals.

Balanced Battery Feed—Employing two-section battery feed coil to assure line balance. (An Automatic Electric "first")

Reverting-Call Service — Permitting automatic handling of calls between parties on the same line.

Reverting-Call by Directory Number—Providing automatic reverting service without special codes.

Automatic Service on Extremely Long Lines—Automatic dialing over lines of up to 1500 ohms loop resistance, or with line leakage as low as 15,000 ohms. Provides dependable automatic operation on any line satisfactory for telephone transmission.

Reverting-Call Answer Tone—Informs answering party that call has been made by another party on the line—thus prevents loss of calls. (An Automatic Electric "first")

Message-Rate Service—By means of automatic meters at the central office or substation.

Paystation Service — Permitting full-automatic handling of paystation calls. (An Automatic Electric "first")

Restricted Service—Provides for grading service to meet specific rate requirements. (An Automatic Electric "first")

Unattended Operation of Small Exchanges—With automatic handling of local calls, and toll calls switched to a distant operator. (An Automatic Electric "first")

Automatic Alarm Transmission — Transmits emergency and non-emergency alarms to distant control operator. (An Automatic Electric "first")

Ringing-Machine Transfer—Automatically, or by remote control.

Automatic Power Control — Automatically switches counter cells and end cells, activates second power source (rectifier, generator, etc.) as required.

Dial-Back Equipment—Enables toll operator to complete connection between subscribers in two different exchanges, by dialing back on the same trunk over which the call was received. (An Automatic Electric "first")

Automatic Toll Dia[ling]—Ena[bles] operator to complete[toll] conn[ection] sistance at terminati[ng] exchan[ge] Electric "first")

"Camp-on-Busy" Fe[ature]—P[ermits] called line by toll op[erator], wit[h] is busy; line is autom[atically] sei[zed] freed from first call. ([An] Autom[atic]

Calling Number Ve[rification]—ator to check number [of] calling

Delayed Ring—Ena[bles] toll o[perator] and hold connection [of] calling lishing connection. ([An] Automa[tic]

Automatic Answer[ing]—Pre-[arranged] to operator, avoiding [ne]cessity f[or]

Choice of Dialing [Ar]rangem[ents]—simplex, composite, a[nd] voice-fr[equency] frequency pulsing.

Line Lockout—Dise[ngages] fau[lty] change equipment fo[r] use.

Automatic Keysen[der] Equip[ment]—impulsing facilities fo[r] operators

Private Automatic [Br]anch Ex[change]—ing automatic interc[ommunication] service, service, and various s[pecial] com[mon] naling services. (An [Au]tomatic

Unattended P-A-B[X]—Includi[ng] ties for answering a[nd] transferr[ing] calls at any telephon[e]

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ne Systems

addi on of service features adapted

equip ent today provides the largest
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nges— d all are time tested and proven.
state nts against the list below. Notice,
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l whic has kept Automatic Electric always
y.

ll Dia g—Enables toll originating
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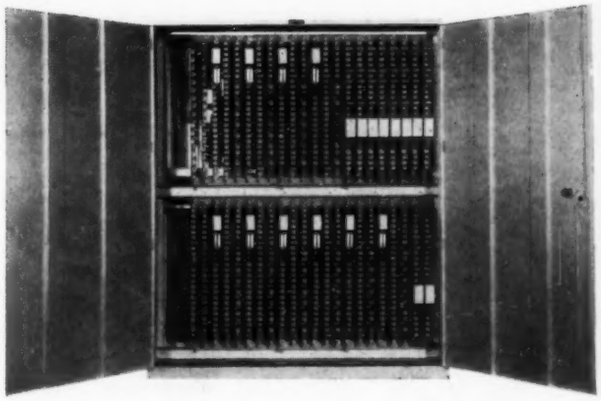
ninati xchange. (An Automatic

y" Fe ure—Permits connection to
oll op tor, without ringing if line
autom ally seized and rung when
call. (Automatic Electric "first")
er Ve ication—Permits toll oper-
umber calling telephone.
—Ena s toll operator to establish
ection calling party while estab-
on. (Automatic Electric "first")
nswer g—Pre-distribution of calls
oiding cessity for "answering" key.
aling rangements—Using loop,
site, a voice-frequency or carrier-
ng.
—Dise ges faulty lines—frees ex-
ent fo se.
eysen Equipment—High-speed
ies fo erators' use.
natic nch Exchange—Combin-
interic rvice, central office trunk
rious s ial communication and sig-
(An tomatic Electric "first")
P-A-B—Including complete facili-
ing a ransferring incoming trunk
phone

Above — In Strowger Automatic exchanges, large or small, any desired combination of service features can be provided, as required to meet the specific requirements of each installation.

•

Right — Automatic Electric relay-type switchboards, too, offer a complete range of valuable service features.



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Independent Pioneer Association Holds Board Meeting in Chicago

THE Independent Pioneer Telephone Association board of directors held their annual meeting in Chicago, October 2. Roy W. Siemund, popular Telephone Pioneer and president of the Leich Sales Corporation of Chicago, was unanimously elected president for the coming Association year. Walter Dakin, president of the Commonwealth Telephone Company, Madison, Wis., was named 1st vice president and Ray W. Smith, president and editor of TELEPHONE ENGINEER publications was named 2nd vice president.

The dean of all Independent Pioneers, J. K. Johnston, founder of the Association and secretary-treasurer since its inception, was re-elected secretary-treasurer, and Miss Julia Harmon was again named assistant secretary-treasurer. They maintain national headquarters in the Lemcke Building, Indianapolis, Ind.

Garland B. Foscue, president of the Independent Pioneers for the past two years, presided at the meeting. He was signally honored by Director Kelley McNish who eulogized his services in a motion for resolution. A resolution along the same nature was offered by Mr. Johnston and Miss Harmon from national headquarters in which they stated that Mr. Foscue's services had been of inestimable value to the Association during the war years.

L. E. Clark of the Mutual Telephone Co., Honolulu, Hawaii, and Rodney Coggin, president of the newly formed Tidewater Tel. Co. of Virginia, were named members of the advisory board to fill the terms of R. C. Reno and Ray W. Smith, Chicago, resigned.

The three directors whose terms would normally expire this year, were held over until annual meeting of the membership in 1946. They are: Messrs. Lumpkin, Foscue and McNish. Incoming President Siemund has announced the following committee appointments: Membership Committee: Mr. Johnston, chairman; Messrs. Dakin and Lumpkin, members; Auditing Committee: Mr. Foscue, chairman, Oscar Burton and Mr. McNish, members; Publication Committee; Mr. Siemund, chairman, Messrs Reno and Smith, members.

In view of the 1946 annual meeting, Mr. Siemund was empowered to appoint an entertainment committee for the annual banquet held each year the USITA convenes. Members of this committee will be announced when released by Mr. Siemund.

Mr. Foscue, in addressing the board, turned over the leadership of the Association to Mr. Siemund with a record of accomplishment that leaves the Association in its best shape in history. His untiring work has set a precedent and the entire board feels that the popular Mr. Siemund is well qualified to take over the reins.

At Board meeting of Independent Pioneers in Chicago, October 2. Photographed just after the election of officers are (L to R): G. B. Foscue, retiring president; J. K. Johnston, secretary-treasurer and founder of Pioneers; and Roy W. Siemund, the newly elected president.

Communications in Italy

Communications networks in Italy have been restored so effectively by the U. S. Signal Corps that all sections of the country are now linked together by adequate cable and wire facilities for military and occupational purposes.

In many areas military requirements were of such a nature and extent that existing civilian facilities were not adequate from either the standpoint of territory covered or the number and types of circuits available. Consequently, in addition to rehabilitation of the civilian system, the Signal Corps was required to construct local and long line facilities for exclusive military use by the addition of open wire circuits on reconstructed civilian routes and the construction of strictly military open wire and cable routes.

As of June 30, 1945, the combined telephone and teletype network now being utilized for military traffic in Italy comprises a total of 2,209 open wire route miles and 1,750 cable route miles. There were 78,499 telephone circuit miles in service including telephone carrier, and 43,013 teletype circuit miles in service.

Exclusive of telephone switchboards serving tactical headquarters and switchboards of less than 50-line capacity, there were 258 telephone switchboard positions working in the military network, providing a total of 10, 654 lines. In addition, throughout the metropolitan areas 9,393 dial telephone lines were working from rehabilitated civilian dial telephone exchanges to serve the various military headquarters.

Increased Rates

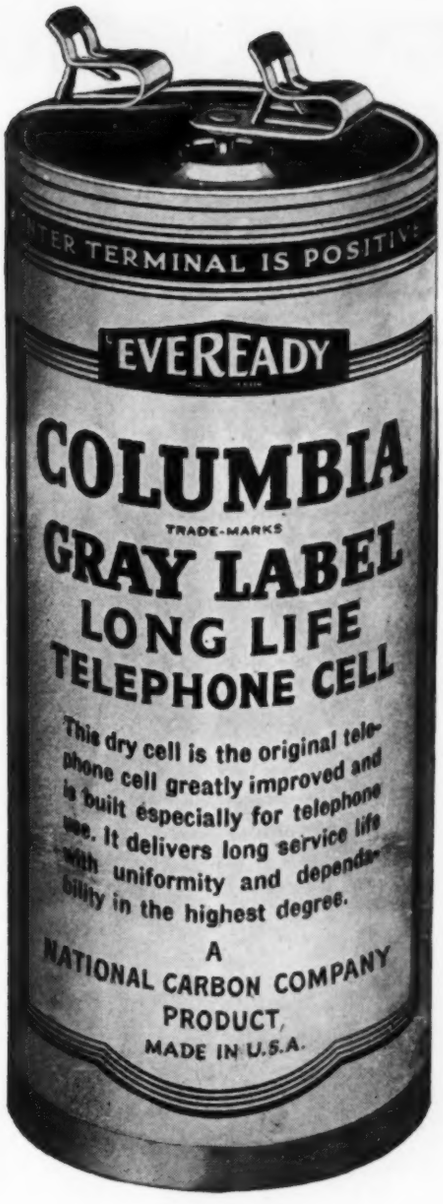
The McGrath (Minn.) Telephone Association was authorized by its state commission, September 24, to increase its rates effective the first billing date following September 30. The change in rates is as follows:

Class of Service	Old Net Rates	New Gross Rates
Individual Line—Business	$1.50	$2.50 (a)
Two-Party Line—Business	1.50	2.25 (a)
Extension Stations — Business		1.00 Net
Individual Line—Residence	1.00	1.75 (a)
Two-party Line—Residence	1.00	
Four-party Line—Residence	.75	1.50 (a)
Extension Stations — Residence	.75	.75 Net
Rural Multi-party	.75	1.50 (a)
Service Station Switching		.50 Net

In addition to the above rates, a charge of ten cents per call is authorized to non-subscribers. Suspension of service at the request of subscriber, 50 per cent of the regular net rate.

(a) A discount of twenty-five (25) cents per month is to be allowed if paid on or before the 20th day of the month for which service is rendered.

The Biggest Argument for this Battery Is its use by the Biggest Independents!


TER TERMINAL IS POSITIVE
EVEREADY
COLUMBIA
TRADE-MARKS
GRAY LABEL
LONG LIFE
TELEPHONE CELL
This dry cell is the original telephone cell greatly improved and is built especially for telephone use. It delivers long service life with uniformity and dependability in the highest degree.
A
NATIONAL CARBON COMPANY
PRODUCT
MADE IN U.S.A.

THE SERVICE and maintenance problems of these telephone companies are multiplied many times over. They *must* use a battery that gives maximum performance and also cuts down replacement costs. That battery is the "Eveready" "Columbia" "Gray Label" telephone cell. Its quality accounts for savings month in and month out.

★UNIFORM QUALITY ★LONGER LIFE ★SUSTAINED VOLTAGE

NATIONAL CARBON COMPANY, INC.
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***General Offices:* 30 East 42nd Street, New York 17, N. Y.**
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The trade-marks "Eveready" "Columbia" and "Gray Label" distinguish products of National Carbon Company, Inc.

The same economy can be enjoyed by the "switchers" on your list. Keep them in the habit of buying these high performance, high quality telephone cells.

FOREIGN STYLES

in Climbers

LINEMEN of an eastern power company recently tested out some Belgium Climbers brought back from Europe by a G. I. lineman. In their opinion the Belgium climbers were comfortable and easy to use, the comfort being provided by the plate on which the worker stands. It would appear, however that they offer the distinct disadvantage of making it almost impossible to walk from one pole to another when the climbers are being worn although it is claimed that the hooks provide safety because linemen must remove them when not actually climbing.

German climbers, which are designed for use on wood, steel, or concrete are also pictured. Steel and concrete poles are much more common in Europe than in the U. S. because of the scarcity of lumber on the Continent.

Wearing German climbers on a steel pole. This photo of Sgt. Warren W. Turner is by courtesy of Pacific Tel.'s editor, R. C. Smith.

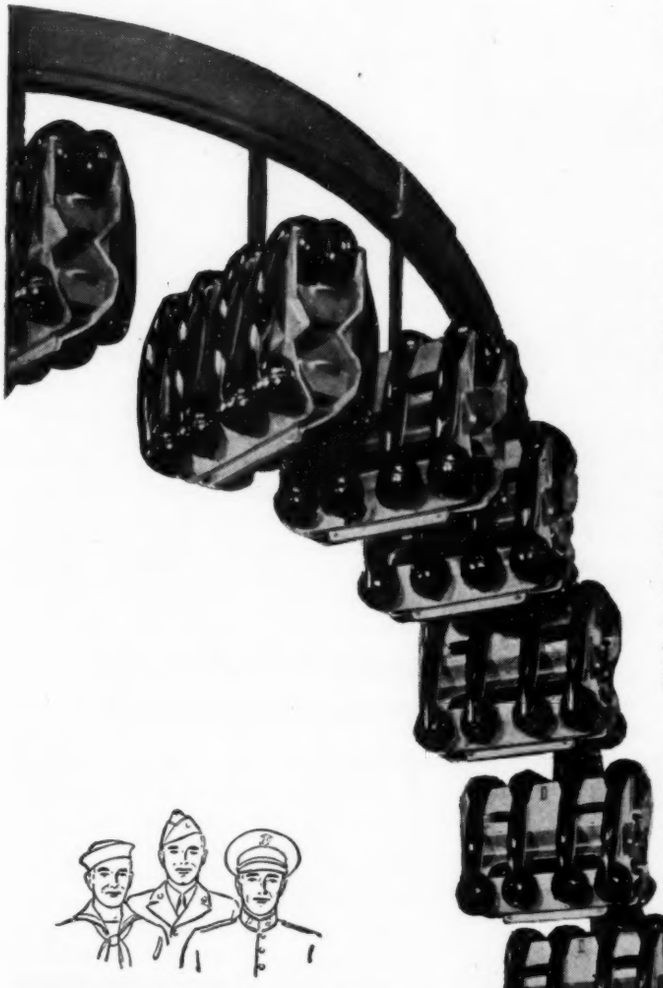
The unique Belgian climbers in the panel photographs are presented by courtesy of Editor Miato of "Electric Light & Power."

Frank Sontag tries out a pair of Jap climbers brought home from the Aleutians by Major Henry B. Nelson, who was exchange engineer in Spokane for Pacific Tel. & Tel. before he entered the service.

The sickle-shaped climbers of the Japanese that are illustrated, work fairly well with their crab-like grip on the pole but those who have tried them prefer U. S. designs for both comfort and safety.

Frank Sontag tries out a pair of Jap climbers brought home from the Aleutians by Major Henry B. Nelson, who was exchange engineer in Spokane for Pacific Tel. & Tel. before he entered the service.

FULL SPEED AHEAD ON OUR BIGGEST PEACETIME JOB!



WHEN the war ended, Western Electric, to the extent permitted by war regulations, had already made a start on its *regular* job — supplying the equipment the Bell System needs to give telephone service.

Today, conveyors like this are carrying thousands of new telephones.

But it takes far more than just telephones to provide service. It takes cable, central office equipment and many other complex items that cannot be produced and fitted into the System overnight. To get back into full production of these things, and provide maximum employment, reconversion was started the moment the war ended—with every available mechanic engaged on a seven-day basis.

Western Electric, supply unit of the Bell System, is now tackling the biggest peacetime job in its history. Furnishing materials and equipment to meet the System's immediate needs — and then to carry out the System's $2,000,000,000 post-war construction program—promises a volume of production greater than in any peacetime year and a level of employment higher than in the years immediately preceding the war.

Western Electric

SOURCE OF SUPPLY FOR THE BELL SYSTEM

Buy all the Victory Bonds you can — and keep them!

Some highlights on our job for the Armed Forces

From January 1, 1940 to June 30, 1945, our Government contracts *alone* totaled almost $2,000,000,000—a larger amount than the *total sales* of the Company during its first 54 years from 1869 to 1923. Here are a few of the items involved.

Radar: More than 56,000 radars of 64 types valued at almost $900,000,000.

Gun Directors, Gun Data Computers: More than 1600 for aiming anti-aircraft and coast defense guns.

Airborne Radio: More than 600,000 receivers, 400,000 transmitters, 50,000 combination receivers and transmitters.

Tank and Artillery Radio: More than 139,000 receivers, 74,000 transmitters.

Microphones: More than 1,700,000.

Headsets: More than 1,400,000.

Cable: More than 4,300,000 miles of wire in lead covered cable and 63,000 miles in Spiral-4 rubber covered cable.

Also large quantities of field telephones, switchboards, field wire and carrier equipment.

USITA Board Meeting and Annual Convention Reports

(Continued from page 41)

traffic and costs and intrastate interchange traffic and costs should be composited in an overall line-haul weighting plan and a single weighting factor applied to all traffic through a specific gateway, without differentiating among the three classes of traffic.

The report noted that the cost for a mile of toll circuit varies inversely with the number of stations delivering traffic to that circuit; the utilization of the toll circuit also varies directly with the number of stations delivering traffic; average costs per mile of toll circuit and toll poll lines are probably different for the Long Lines and Associated Bell companies than for Independent companies; and the average utilization of Independent toll circuits likewise is generally different than on the Bell System toll circuits.

To Prepare Final Table

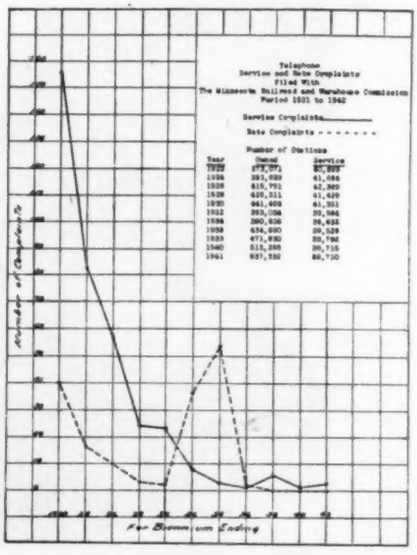
THE tentative pattern for the nationwide line-haul weighting curve was formulated after the mid-September meeting with the A.T.&T. representatives on the basis of data, furnished by the Toll Compensation Committee to the Bell System representatives covering more than 25,000 miles of Independent toll circuits. It was stressed that this tentative pattern, which was carried as Exhibit 1 in the committee's report to the USITA membership, is subject to adjustments still pending to evaluate generally Independent cost levels and traffic and Bell cost levels and traffic.

The Blakeslee committee stated that it is prepared to undertake to supplement the data with further facts "to the end that the weighting curve finally adopted will be most accurate and significant." When the ultimate level of the proposed graduated weighting scale or curve is formulated on the basis of the most complete data available, the proposal will then be submitted to the Toll Compensation Committee. The report noted that from the information furnished by the USITA committee and with similar data respecting experience of the Associated Bell telephone companies, the Bell System representatives will undertake to evaluate the curve and develop a proposed weighting table or schedule, based on the tentative pattern and principles reached last September 11-12.

E. M. Blakeslee, Chairman
Toll Compensation Committee

Not Less Than 1-to-1 Ratio

THE committee urged that in the development of the final weighting curve, provision should not be made for weighting of the Independent line-haul at less than a 1-to-1 ratio, but cited that it is possible that when actually evaluated the curve may not reach a ratio lower than 1-to-1, in which event no adjustment to reflect this philosophy would be necessary. Actual toll line costs and circuit utilization relationships will be controlling in the determination of the level of the curve. Each prorate exchange (and presumably each toll station) would be considered separately in applying the proposed weighting curve. Thus, the committee report emphasized, company-wide averaging of exchanges and the attendant influence of large exchanges to dominate the weighting computation would be avoided.



The committee report also advocated that the present system of computing mileages via the respective junction points on traffic involving Long Lines, the Associated Bell Telephone Company, and the Independent company be eliminated and that all prorates be made on the basis of mileages measured air-line from the point of junction of toll line facilities of the Associated Bell Telephone Company and its Independent connecting company, to the respective points of origin and termination.

Rural Telephone Service Committee

THERE are fewer farms without telephone service today than at any time in the history of the telephone industry, according to a report submitted this week to the United States Independent Telephone Association membership by its Rural Telephone Service Committee. Despite materials and manpower limitations imposed on the industry by the demands of war, telephone service has been extended to about 400,000 additional farms since 1940, making an increase of 500,000 farm telephones since the depression days of the mid-1930's and existing facilities of many operating companies are sufficient to care for additional rural telephones in number equivalent to about 25% of those now served as soon as instruments can be obtained.

The Rural Telephone Service Committee is headed by R. A. Lumpkin as Chairman and A. L. Hart as Vice Chairman. Other members are J. H. Agee, F. S. Barnes, H. V. Bozell, V. E. Chaney, L. W. Hill, Gustav Hirsch, R. H. Manson, J. W. Morrison, R. A. Phillips, H. W. Pike, R. E. Shotts, and J. H. Wright. One of the difficulties which confronted the com-

R. A. Lumpkin, Chairman
Rural Telephone Service Committee

mittee in its efforts to obtain an accurate estimate of total rural telephone installations and service was the vast variety of available data, much of it based on census reports. The committee took exception with the Census Bureau definition of a "farm" which, it said, could include "a mushroom cellar in a sub-basement of the Waldorf-Astoria," just so long as it produces a gross of $250 worth of mushrooms per annum and believes the real question involved must be identified with the number of farm families or households actually located in rural areas and their related telephone service.

Pointing out that rural telephone service has not been developed as far as the industry would like to see it, and telephone people everywhere are, in general, seeking ways and means to extend and expand rural telephone service on the basis of rates economically feasible to both the operating companies and customers, the committee stated that, in general, rates for rural service provide less revenue than is necessary to cover the cost to operating companies of rendering service. In addition, while approximately 80 percent of the farm families in the United States live sufficiently near to existing pole lines so that they can obtain telephone service without payment of construction charges, some 40 percent of these families have not subscribed to the service already available.

Dial Conversion May Be Answer

EMPHASIZING the necessity of finding means of extending wire facilities for rural service as inexpens-

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CREOSOTED SOUTHERN YELLOW PINE POLES

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REDUCING SLEEVES

Unsurpassed for splicing two wires of different sizes . . .

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After sessions the Telephone Engineer camera snapped Carl L. Spaid of USITA Advertising Committee, Floyd Ridings, USITA secretary, and Jim Pfaender of Stromberg - Carlson.

H. W. Pike, Chairman
Commercial Committee

ively as possible, the committee stated that most operating companies are looking forward to dial conversion in an effort to solve the problem of rising labor costs. A study of operating cost statements of one of the larger Independent companies, made in April, 1945, showed a total cost of serving one rural station with manual equipment to be $49.72 per annum while the per annum cost of serving one rural station with dial equipment was $35.51. Plant investment for dial equipment was only about $8.00 higher on a per station basis.

The committee cited Census Bureau and Agriculture Department estimates indicating a total of 5,500,000 farms in 1945 and concluded that an expectation of 6,000,000 farms, or back to the 1940 level, within a few years is not unreasonable. Based on this total, the committee believes a recently-suggested objective of 4,000,000 farm telephones is not a goal too high for achievement. Obstacles to be overcome were listed as the cost of plant involved in furnishing rural service, the need for further education of the American farmer regarding the value of farm telephone service, and indoctrination of telephone companies with their public-servant responsibility of serving rural areas of the nation to the maximum extent that is economically feasible.

Rural Telephone Legislation Committee

A closely-related report which has been submitted to the Association was that of its Committee on Rural Telephone Legislation, which was created in March, 1945, to combat "the threat of invasion of another field of private enterprise by the Federal government." The report stated that the committee has pursued a policy of "watchful waiting" since the several Rural Telephone Administration bills have been subordinated to war and peace legislation and sponsor-anticipated agricultural support has not materialized.

The Rural Telephone Legislation Committee quoted from the resolution which created it and urged a continuation of the effort of managers and owners of Independent telephone properties "to do everything possible to resist the passage of the Hill and other such bills." Committee members are Oscar Burton, Chairman; F. S. Barnes, H. V. Bozell, C. D. Brorein, W. B. Clay, Minor Corman, D. O. Hood and Samuel Tucker. The Committee report highly commended the work of the Rural Telephone Service group.

At the same time, the USITA's Commercial Committee reported that it had curtailed its own activities during the past year because of the great number of detailed questionnaires, many of which were of a commercial nature, used by the Rural Telephone Service and Rural Telephone Service Legislative Committees.

While member companies had not been urged to make the survey of rural telephone usage which was outlined by the Commercial Committee at the Oct., 1944, convention, one Iowa company used the forms to discover the average monthly usage and savings per customer. Replies indicated an average total of 195 outgoing and incoming calls per month with a resultant saving of 24.1 hours of time and 453.6 miles of driving.

Oscar Burton, Chairman
Rural Telephone Legislation Committee

The committee feels these results justify a more extended survey as an aid in future sales activities. The committee is headed by H. W. Pike, Chairman, with F. T. Byrne, V. B. Clark, A. N. Johns, R. F. Lucier, C. C. Pearce and H. M. Stewart assisting him.

Traffic Committee

The Traffic Committee of the United States Independent Telephone Association recommends to telephone companies' managers that they engage all the people they can at the present time, particularly urging them to reengage former operators who left to take war jobs and now wish to return to peacetime employment. Recognizing that operators who remained with the telephone companies might resent the return of those who "abandoned ship," the committee does not deem it important against the advantages of reengaging trained personnel, thus facilitating a prompt return to a normal work week.

The committee also feels that the industry has slipped from its prewar standard of courtesy to the customer and that real community service can be accomplished by bringing back the "Voice with the Smile." The report was signed by the Committee Chairman, W. A. Kern.

Plant Committee

Conversions Should Be Carefully Reviewed

TWO committee reports submitted this week to the United States Independent Telephone Association Board of Directors deal with problems which must be overcome to permit successful conversion to dial opera-

tion. Section I of the report of the Plant Committee recites that "during the dark days lying immediately behind us, when the difficulties in securing and retaining switchboard operators and agents were so great, many managers resolved that, as soon as the war was over, the old manual switchboard must go. Such decisions, made in moments of despair, naturally will be carefully reviewed before action is taken, and, of course, they should be reviewed for it is well known by all who have given the subject close study, that dial equipment is not the answer to the operating problem in every exchange."

Emphasing that careful study should be given the subject, the committee, in the section of the report signed by its Chairman, F. E. Norris, pointed out that in exchanges with several toll routes radiating from the central office, it may be necessary to retain some operators after conversion; also, if there are a large number of long grounded lines served from a small exchange, dial equipment may be undesirable. In addition, there is the problem of making suitable arrangements with an agent or a nearby company for handling information and other auxiliary services.

To assist managers in making a dial conversion study, the Plant Committee is publishing a booklet outlining a procedure by which they can determine the economical merits of converting a small exchange.

Discusses Use of Radio

ONE section of the report was devoted to a discussion of the use of radio channels as a supplement to wire lines and this section is carried in detail on page 36. B. C. Burden, former USITA Engineer who prepared the statement, listed the folowing proposed types of service: (1) Special Emergency Service, for initial restoration of emergency-disrupted service, dispatching of repair crews, etc.; (2) Rural Radio Telephone Service, to supplement existing wire facilities in sparsely-populated sections of the country; (3) Urban Mobile Radio Telephone Service, a two-way connection between vehicles in or near a city or town and any regular telephone subscriber; (4) General Highway Mobile Radio Telephone Service, a two-way communication between vehicles moving over the nation's trunk highways and regular subscriber telephones; (5) Short Distance Toll Channels, for situations in which only one or two toll circuits are required between points up to 20 or 30 miles

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LONGER LIFE

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These qualities, more important now than ever before, are assured through the constant supervision of America's largest dry battery laboratory.

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COOK XB
CABLE TERMINAL
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Available in 6 to 26 pair sizes, the Cook XB Unprotected Cable Terminal offers many important features:

Patent metal guards exclude snow, rain, dirt, and insects at the drop wire openings.

The patented plastic faceplate and insulated fanning strip are molded in one piece.

Raised stud mountings eliminate surface leakage.

Patented cable entrance and cable holding sleeve provide secure and tight cable joint.

The compound is completely filled by an exclusive moisture-proofing process that insures against shorts and grounds by permanently positioning the cable pairs. Heavy reversible zinc hood permits mounting with stub from either top or bottom.

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Fred E. Norris, Chairman,
Plant Committee; also
Heads Dial Interexchange Committee

apart; and (6) Long Haul Radio Relay Channels, for radio relay services, using directed radio beams operating at ultra-high frequencies.

It was warned that the use of radio channels in the telephone field for the various applications listed above creates a number of economic and technical problems, and that time will be required to determine if radio can be justified in lieu of wire lines. Although greater flexibility would result from the ease of connecting or disconnecting rural subscribers, the small, single-unit companies cannot afford to establish these new services without some assurance that they will at least break even on the required investment. Technical problems also present difficulties; for instance, the frequencies which have been allocated for radio telephone service are largely in the range which operate on a near line of sight basis and require a fairly uninterrupted path between the transmitter and the receiver.

Dial Interexchange Committee

THE Dial Interexchange Committee, also headed by F. E. Norris, considered another aspect of conversion from manual to dial operation between exchanges and toll service. Recognizing that conversions "in the period lying immediately ahead likely are to be made at an unprecedented rate," the committee stated that it appears inevitable that the industry consider the practicability of completing toll messages between exchanges under dial or key control on a wider scope than heretofore used.

The main problem considered by the committee was that of making satisfactory "control office" arrangements when the only nearby office is owned by another company. The Committee stated its objective as the development of a pattern by which problems and costs incidental to one company performing control office work for another may be dealt with fairly, equitably and simply, and announced its plan to develop a basic form of guide contract for use by individual companies making arrangements with connecting companies. No date was given for release of the guide.

Besides Chairman Norris, who is Vice President in charge of Operations of the Associated Telephone Co.,

Harold V. Bozell, Chairman,
Tax Committee

Ltd., of Santa Monica, Cal., the other members of the committee are V. E. Chaney, A. L. Hart, C. E. Jones, D. A. Kafka, W. A. Kern, R. A. Lumpkin, J. W. Morrison and H. W. Pike. This was a new committee created by the Association last May.

Continuing Property Record Committee

IN its report sent to members this week, the USITA Committee on Continuing Property Record thanked the Federal Communications Commission for cooperative action during the war years in extending the effective date for completion of the Continuing Property Record. At the same time, it suggested the desirability of an early FCC decision concerning the Plan previously proposed by the Association. The Report called attention to the fact that the matter is not entirely one of accounting involving companies fully subject to the jurisdiction of the FCC as many state regulatory commissions have adopted the FCC's System of Accounts.

V. E. Chaney, Chairman, and committee members T. A. Boyd, C. D. D'Aoust, Ranford Dunlap, H. A. Hanson and L. W. Hill warned that failure to adjust the controversy may result in a company being in the position of being required to maintain two sets of records.

Tax Committee

THE major undertaking of USITA's Tax Committee during the past year, according to a report distributed to members this week, was a survey to determine the possibility of claiming relief from excess profits taxes under Section 722 of the Internal Revenue Code on the basis of the change in method of toll settlements from the so-called "Board-to-Board" theory to the "Station-to-Station" theory. Results of the survey indicated little hope for this relief and none of the companies replying to the questionnaires had filed claims.

Among its recommendations to the membership, the committee suggested that it be authorized by the Association to attempt to secure the complete elimination of the Federal excise taxes now imposed upon telephone, telegraph and wire services and repeal of the excess profits tax. Committee members are John H. Agee, Vern E. Chaney, Judson Large, John R. Porter, and Harold V. Bozell, Chairman.

Verne E. Chaney, Chairman,
Continuing Property Record Committee

LETTERS

from TELEPHONE ENGINEER readers

Gentlemen:

I have just read George Peterson's article "The Rural Line Noise Problem" and I agree with him on the subject. We have about 3,000 miles of rural telephone line scattered throughout the state of Florida. Back in 1942 I realized that something would have to be done about the noise problem with respect to the future expansion of power circuits in all rural areas. I decided to try cleaning up our existing lines before the end of the war thus partially offsetting the rush toward line improvement at the last minute.

After scratching the head for a few months it was decided to place a three year plan into effect. The plan included training unskilled personnel in electrical measuring work. This of course meant training personnel. Accordingly, in 1943, the plan began to work by conducting telephone training schools. The training was verbal and visual backed up by a simple manual on electrical maintenance. The plan took a certain amount of funds to set up the proper test equipment and plenty of extra hard work on the part of everyone connected with the plan. But now after several years have passed, our lines are more than three-fourths finished and the majority "talk quiet." We only have about 800 more miles of existing line to "go" then we are ready to start new construction on a proposed 4,000 miles which will practically be side by side with power circuits.

I am mailing you a copy of "Electrical Maintenance for the Metallic Telephone Lines of the Florida Forest and Park Service" which is the follow-up manual issued to field personnel who attended the training schools. I believe this is one answer to "how to do it" when it comes to removing the noise on the line.

Very truly yours,
Ray L. Atkinson,
Administrative Assistant
Statewide Radio
Fla. Forest & Park Service
Lake City, Florida

The Electrical Maintenance follow-up manual Reader Atkinson refers to is copyrighted material which was given to the state in connection with non-profit organization work.—Ed.

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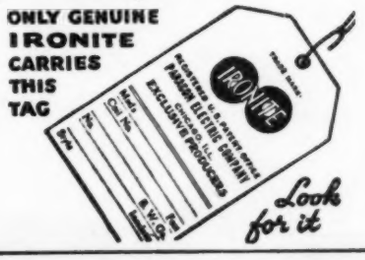

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TYPE RA

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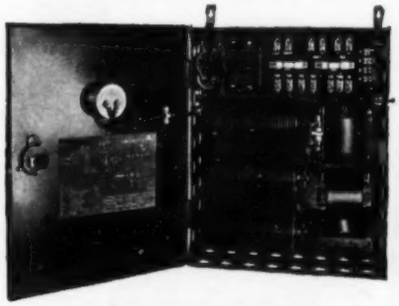

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Delivers smooth, humless, constant output voltage irrespective of current drain, up to the maximum output of the rectifier. Standard rectifier capacities of 1 to 4 amps., from 12 to 48 volts.

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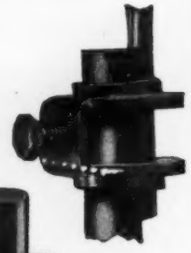
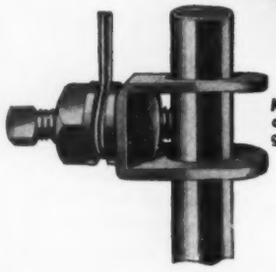
Mfd. by the RELIABLE ELECTRIC COMPANY—over 35 years service to the telephone industry.

. . . for all telephone, radio, and signal circuit station grounds. Design principles of these clamps are field-proved to maintain high pressure contact and maximum conductivity to joint.

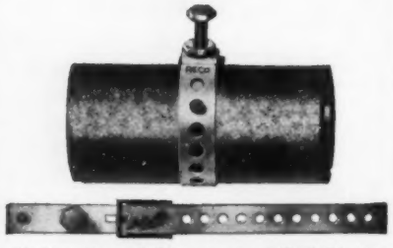
Complete range is described in the Reliable Telephone Specialties Bulletin. Ask for your copy.



Ground Rod Clamps for ½", ⅝" or ¾" steel or copperweld rods.



Kling Klamp for copper or iron ground wires.



Station Ground Clamps are adjustable for grounding to water pipe.

"RELIABLE" IDENTIFIES THE QUALITY

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"Whitall Tatum" GLASS INSULATORS

From the tropics to the northlands, Armstrong's "Whitall Tatum" glass insulators are giving trouble-free service. Meeting all A.S.A. and E.E.I. standards, they defy severe temperature changes.

Automatic machinery plus precise laboratory control guarantees uniformly high electrical and physical properties. Batch materials are rigidly checked. Ring-section studies assure uniformity of the glass while polariscope examinations certify that annealing has cancelled internal stresses and strains.

Crystal clarity of the glass reduces malicious breakage to a minimum. Careful gaging of the pin cavity results in a true, snug pin fit.

For samples and full information, write:

STROMBERG PROGRESS IN TELEPHONY CARLSON

STROMBERG-CARLSON COMPANY

Factory and General Offices: Rochester 3, New York, U. S. A.
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To Have New Dial System

Announcement was made recently by Earl Payne, manager of the Lone Rock and Muscoda (Wis.) exchanges of the Commonwealth Telephone Company, Madison, Wis., that the lot owned by this company, located across the street from the present Lone Rock office, has been surveyed preparatory to erecting a building that will house the new dial system equipment and facilities for the Lone Rock exchange.

Because the order for dial equipment was placed sometime ago with a company working 100% on war production, Mr. Payne hopes the system will be all set up and working before the first of January. All old phones will be used by exchanges having Lone Rock's old system, where they are badly needed.

Automatic Names H. A. Burroughs Assistant Vice President

Announcement has been made by Automatic Electric Company that Howard A. Burroughs, formerly assistant chief engineer of that company, has been appointed assistant vice president reporting to Theodore S. Gray, vice president and general manager, effective immediately.

H. A. Burroughs

In this capacity, Mr. Burroughs will continue his present duties of maintaining technical contact between Automatic Electric Company and its customers in the Independent telephone field, and in addition will take over certain duties previously handled by C. S. Cadwell, operating vice president, including various technical commercial negotiations.

Mr. Burroughs became associated

with the Gary Group in June, 1944, when he was appointed manager of the Washington office of Gary Services and Investment Company. In June of this year, he moved to Chicago to become assistant chief engineer of Automatic Electric. Prior to the time of his Washington appointment, he held important technical positions with various government agencies, including the Federal Communications Commission and the Navy Department's Bureau of Ships.

In his new position as assistant vice president of Automatic Electric Company, Mr. Burroughs will, in addition to the duties already mentioned, assume other related responsibilities, including supervision of the company's operating staff headed by F. A. Davis, operating engineer and with C. J. Pracht as assistant operating engineer. Mr. Burroughs will also have on his staff A. E. Eckert, staff engineer, who is assuming his former duties as technical contact in the foreign field.

Rural Exchanges Purchased

The Randall (Minn.) Rural and South Parker (Minn.) Telephone companies have been sold to C. A. Turnquist, who will operate them under the name of Randall Telephone Exchange. Mr. Turnquist is reconstructing the plant and equipment within the village of Randall and when equipment is available, will install a complete dial system.

Following certification of completion of improvements, new rates are to be effective as follows:

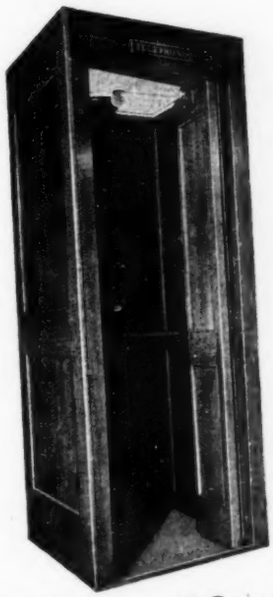
	Local Battery or Mag. Serv.	Common Battery or Dial Serv.
Individual line business	$2.75 gross	$3.25 gross
Two-party line business	2.50 "	2.75 "
Individual line residence	2.00 "	2.25 "
Four-party line residence	1.50 "	1.75 "
Rural multi-party business	2.25 "	2.50 "
Rural multi-party residence	1.75 "	2.00 "
Extension business telephones	.75 net	1.00 net
Extension residence telephones	.50 "	.75 "
Extension bells, bus. or res.	.25 "	.25 "
Rural switching rate. with a minimum of five stations on any line or a minimum of $2.50 per month per line.	.60 gross	.85 gross

Investigation of Service

On October 2, 1945, the Minnesota Railroad and Warehouse Commission held a public meeting in Hills (Minn.) to receive evidence as to the condition of the plant, equipment and character of the service now furnished the public by the Hills Telephone Exchange. This meeting was due to many complaints by telephone users in Hills and the surrounding community.

STROMBERG-CARLSON
RECOMMENDS—

The
CHURCHILL
No. 100 Folding Door
TELEPHONE BOOTH



For Privacy and Comfort When Telephoning

. . . will bring you new customers and insure the old ones returning. People enjoy the privacy and comfort afforded by the CHURCHILL Telephone Booth.

It is constructed as a single unit and equipped with a reinforced back panel for mounting a wall telephone or coin collector.

The **CHURCHILL** Booth is made of selected white oak and is available in light or medium oak in a satin finish.

Included as standard equipment are electric light and automatic electric ventilator.

Overall height is 84¾"; width, 29"; depth, 30½". Shipped knocked down and crated.

Illustrated literature available.

DIAMOND C
Creosoted Yellow Pine
POLES
Mfd. by Colfax Lumber & Creosoting Company, Inc.

INSURE LESS POLE REPLACEMENT

COLFAX Creosoted Yellow Pine Poles are carefully graded according to physical properties desired and treated with 8 lbs., or more if you wish, of Grade No. 1 Creosote Oil in accordance with AWPA specifications.

Each pole is treated full length under pressure with the finest and cleanest creosote oil obtainable.

Reduce losses in revenue due to pole failures—specify:

DIAMOND C
Creosoted Yellow Pine Poles

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EDITED BY J. S. REED JR.

Line AND Desk

Q. We have a noise problem on our common battery exchange line 2½ miles long serving a tavern. This tavern has an elaborate neon lighting system that runs around the roof just under the eaves. The drop wire from the line is attached to a fixture on the front of the building about 3 feet below the eaves and runs down to the outdoor arrestor but does not parallel the lighting. The wire from the arrestor runs up the building and enters the building about half way up from the ground. A bridged ringer with condensor is used. The noise occurs only when the neon lights are turned on. What steps do you suggest we take to eliminate this noise?

A. If the arrestor blocks are clean and are not obviously causing this trouble, the following are possible causes of your difficulty:

(1) A leaky bushing or some other leak in the high voltage circuit of the neon sign may cause a sputtering noise in the telephone line. In time, however, the section of the lighting system affected will go out. The remedy is to have the sign company make the necessary repairs to the lighting system.

(2) The power and telephone grounds may be connected together directly or through adjacent ground rods resulting in some higher harmonic content of the lighting current flowing through the protector toward the central office ground. This may happen especially if there were a high resistance layer in the coil around the tavern that would force current flow through the protector ground. Look for dirty carbon blocks that may cause sufficient connection of the line and ground to pass the noise currents.

(3) The neon lighting operating at 10,000 to 15,000 volts and surrounding the building would create a highly inductive field. It is possible that if the drop wire were parallel without twists or the twists on the two sides of the protector were in opposite directions so as to neutralize each other, there would be an inductive pickup resulting in the noise. The noise would be a steady hum in the line. To test for this condition, clear the entire line of any bridged apparatus and listen in at the office end with the receiver on the hook at the tavern line and the neon lighting turned on. Then see if the noise comes in at the office end when the receiver is taken off the hook at the tavern.

(4) The noise may be due to capacitive coupling between the neon lighting and the telephone line. In this case, the noise currents may be drained off the line by means of two small condensers connected across the line with the midpoint grounded. Try .01 to .05 mf condensers of the radio type.

Q. What would be a good tool for cleaning terminal face plates?

A. A stiff bristle brush may be used to clean out dirt, spider webs, and cocoons in cable terminals. The best results seem to be obtained with a round stencil brush which has short, stiff bristles.

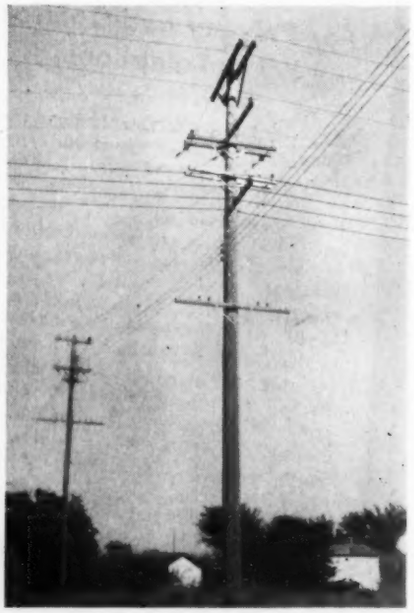


Fig. 1—Illustrating method of making a "passing attachment" of an open wire lead to a high-voltage power pole carrying, respectively, 110-120 volt secondary wires, a 6600-volt and a 33,000 volt line above the telephone wires.

Q. We have an open wire extension to to be built. At one point it will have to pass under a 33,000 volt power line. The power pole is directly in line with our proposed route. Would it be permissible to attach our wires to this pole to avoid an awkward bend in the line? If so, what special precaution would have to be observed?

A. An open wire or cable lead may be attached to a high voltage pole when the telephone lead crosses under the power wires in direct line with the pole. Figure 1 shows how the "passing attachment" is made. The precautions to observe are the following: (1) The telephone conductors should be below the power wires and not less than 6 feet away from them (required for crossing lines carrying 8700 to 50,000 volts); (2) Minimum ground clearance should be maintained in passing under the power line; (3) The climbing space between the pole pairs of the telephone crossarm should not be less than 30 inches. Arrangements should of course be made with the power company for leasing the space on their pole for making the attachment.

Q. Why is it necessary to use intermediate repeaters in a telephone line? Wouldn't a local repeater of very high gain be sufficient to boost the voice currents for satisfactory reception at the distant office?

A. The basic reason for using a number of intermediate repeaters in the line rather than just a single repeater at the terminal point is to keep the voice level well above the noise and crosstalk that is always present in more or less extent in a telephone circuit. If the voice currents were not amplified at several points along the line, the energy level would soon fall close to the noise and crosstalk level and both would be amplified together at the terminal repeater, resulting in severe interference. Moreover, a single terminal repeater would require considerable power compared to several intermediate units located at intervals along a long circuit.

Appointed by Hallicrafters

Lester L. Kelsey

William J. Halligan, president of the Hallicrafters Company, Chicago, producers of short-wave radio war equipment, has announced the appointment of Lester L. Kelsey as a vice president of the firm and general manager of the Echophone division.

Kelsey, who has been associated with the radio industry for more than 24 years, has joined Hallicrafters from his post as assistant to the president of the Belmont Radio Corporation.

R. J. (Rollie) Sherwood was recently made sales manager of Hallicrafters.

With more than 15 years of executive and sales experience, Sherwood came to his new position from General Dry Battery, Inc., Cleveland, where he was assistant to the president.

The new Hallicrafters sales manager enjoys a wide acquaintance in the radio field, having established his contacts in years of selling to the industry.

R. J. Sherwood

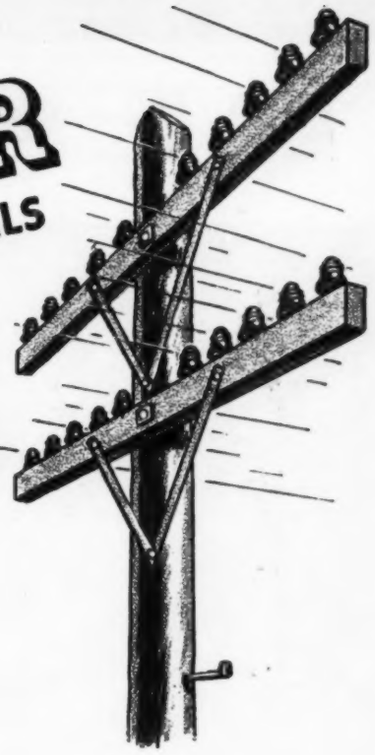
It's

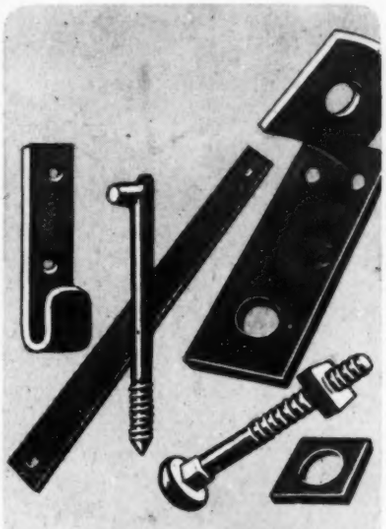
OLIVER

POLE LINE MATERIALS

for

STAYING POWER THAT PAYS





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PRODUCTS INCLUDE

ANCHOR and GROUND RODS
BOLTS BRACES
HOUSE and POLE BRACKETS
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CABLE GUARDS and STRAPS
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GUY WIRE PROTECTORS
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WASHERS (Round and Square)

—and other Hardware for Telephone Line Construction

Telephone men want hardware they can depend on . . . hardware that cuts down on replacement costs . . . saves on labor and labor costs . . . stresses quality and staying power.

No wonder so many linemen are "lining up" with Oliver products in the construction of new lines or for the replacement of old line hardware. Oliver quality goes all the way to keep service uninterrupted.

For staying power that pays, "Line Up" with Oliver hardware now.

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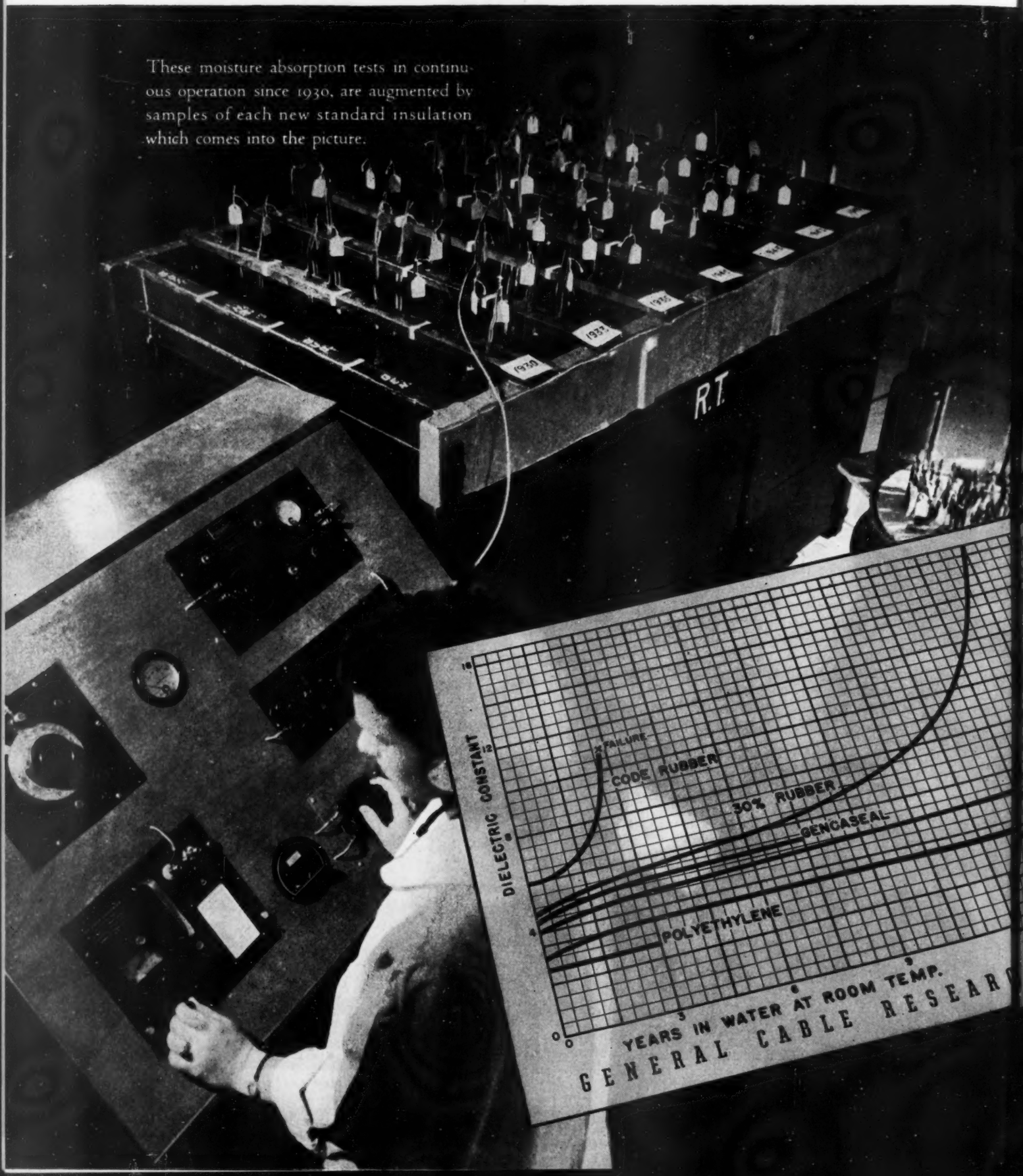
RESEARCH . .


These moisture absorption tests in continuous operation since 1930, are augmented by samples of each new standard insulation which comes into the picture.
R.T.
DIELECTRIC CONSTANT
FAILURE
CODE RUBBER
30% RUBBER
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GENERAL CABLE RESEARCH

. . BY DECADES

Preparedness for Post-War Industry Developments based on cumulative data long in preparation

In the comparison of rubber insulating compounds and the new synthetics, it is easy and hazardous to jump at conclusions. Through the years, General Cable has been broadening its base of data by which to predict with some assurance the performance to be expected of the new materials. And out of practical experience, it recognizes, too, that there is no substitute for time in the determination of the industry's final answers.

These and other tests, extending over years of simulated service conditions, prepare General Cable to furnish synthetic insulations for all operating conditions.

GENERAL CABLE CORPORATION

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Subscribers' TRANSFER Service

IN small manual exchanges having switchboards of only one or two positions, it is common practice for an operator to render various useful service to subscribers, as for example, the transfer of a call from a business to a residence telephone when no answer is received at the business telephone. This is a form of secretarial service but without charge. This type of service is, of course, feasible only in the smallest manual exchanges and then only when the operator has the time and inclination to render this extra service.

There is now available a unit (see Fig. 1) which will automatically render what is known as *subscribers' transfer service* (on either manual or automatic boards) without any attention on the part of the operator. This equipment unit is designed primarily for furnishing transfer service to business men who desire to have calls for their business telephones switched to their residence telephones when their places of business are closed. Professional men find this service very useful.

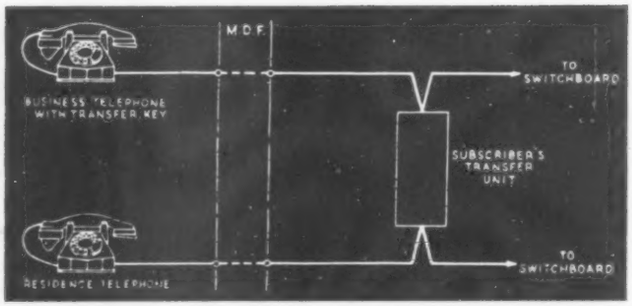


Fig. 2—Schematic diagram showing switching arrangement for subscriber's transfer service.

Equipment Arrangement

A SUBSCRIBER whose lines are arranged for transfer service has his business telephone equipped with a special key which must be thrown to the *operated position* whenever the subscriber desires to have incoming calls transferred automatically to his residence telephone. This arrangement is shown in Fig. 2. When the key is in the non-operated position, the business and residence telephones are completely independent of each other. The transfer unit consists of a compact assembly of relays and other components arranged for rack mounting. These units can be obtained with one, two, three or four sets of relays. At the central office end, the main frame jumpers of the business

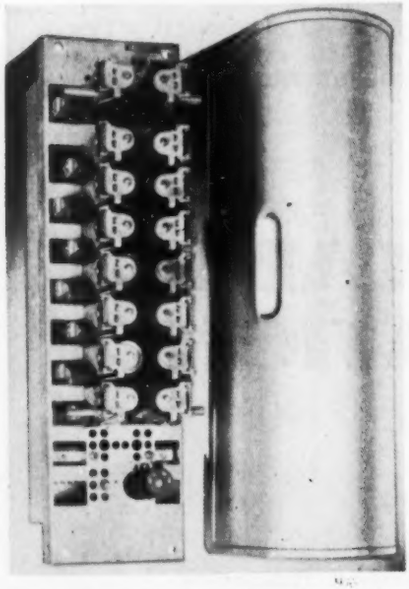


Fig. 1—Transfer unit equipped with four sets of relays.

Illustrations courtesy Automatic Electric

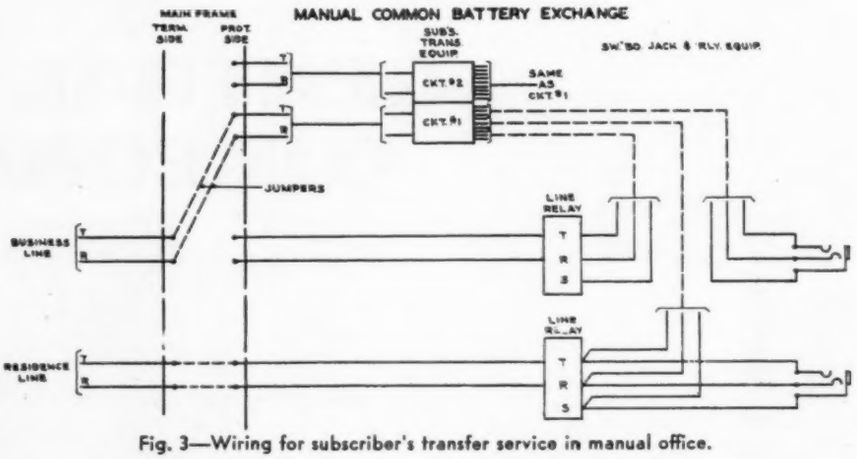


Fig. 3—Wiring for subscriber's transfer service in manual office.

telephone line are disconnected from the regular line relay equipment and connected through the subscriber's equipment as shown in Fig. 3. Transfer units can be used on either automatic or manual exchanges.

Considerations in Furnishing Transfer Service

IN considering the installation of subscribers' transfer equipment the telephone company should make a commercial survey to determine the approximate demand for this type of service. The initial installation of cable and terminals should provide for the maximum anticipated development. The transfer equipment units can be purchased as required.

One of the features of the transfer service equipment shown is the fact that the relay will not immediately release when the switching key is restored to normal while a transferred call is in progress. Conversation is, therefore, not interrupted and the two lines are separated only after the conversation has been completed and the parties have disconnected.

A. L. Salt Dies Retired Graybar Head

Albert Lincoln Salt, 80-year old, retired president and Chairman of the board of Directors of the Graybar Electric Company, Inc., died September 29 at the United Hospital in Port Chester, New York, the result of an illness which had confined him there for the past two weeks.

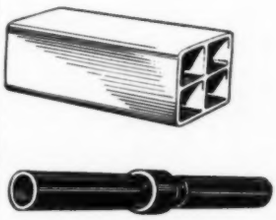
A. L. Salt

Mr. Salt, who possessed a talent for human relationships, during his nearly 50 years of business experience, never found it necessary to discipline an employee. He once summarized

UNDERGROUND
SUPPLIES YOU CAN TRUST

The underground supplies that Graybar distributes are field-proved and give long, trouble-free service. Shown below are some examples. For full facts about any of the hundreds of telephone supplies available via Graybar, call our nearest office.

Graybar Electric Company, Graybar Bldg., New York 17, N. Y.



CONDUIT – Graybar offers Orangeburg fibre conduit and Natco clay conduit – single-duct, multiple-duct, branch, and transposition types. Also, a full line of fittings and accessories, including bends, bushings, reducers, plugs, caps, end bells, adapters, jointing compound and tape, and conduit tools.

MANHOLE SUPPLIES – Graybar distributes manhole frames and covers – cover hooks – ladders–cable racks, grips, insulators–pulling-in irons–guards, platform supports, scaffolds, and shields.

DUCT TOOLS – Graybar offers tapered or straight duct rods with all standard-type couplings. Test and laying mandrels, brush cleaners, rod grapples, sand scoops, and jar hammers. Also, hydraulic pipe pushers and adjustable trench braces.

PIPE AND CABLE LOCATOR–By means of radio waves, this M-Scope positively and instantaneously locates the exact position of buried metal conduit, cable, covered manholes, unknown metallic hazards in the path of excavators, etc. It quickly pays for itself in labor savings.

4571

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First Source of Telephone Supplies

IN OVER 80 PRINCIPAL CITIES

his philosophy of dealing with people as follows: "If you want to slow a man down, try bawling him out."

At the time of his death, Mr. Salt was a director of Eastern Offices, Inc., and a member of the Advisory Committee of the Grand Central Branch of the Chase National Bank.

Western Electric Negotiates Lease

Western Electric Company, the manufacturing and supply unit of the Bell System, is negotiating a lease for the Government-owned Studebaker plant in Chicago to augment the manufacturing facilities of the Company's Hawthorne Works, it was announced September 24. Acquisition of the new location, in which manufacturing operations are expected to start this year, will assist the Western Electric Company in speeding the production of telephone equipment urgently required by the Bell System.

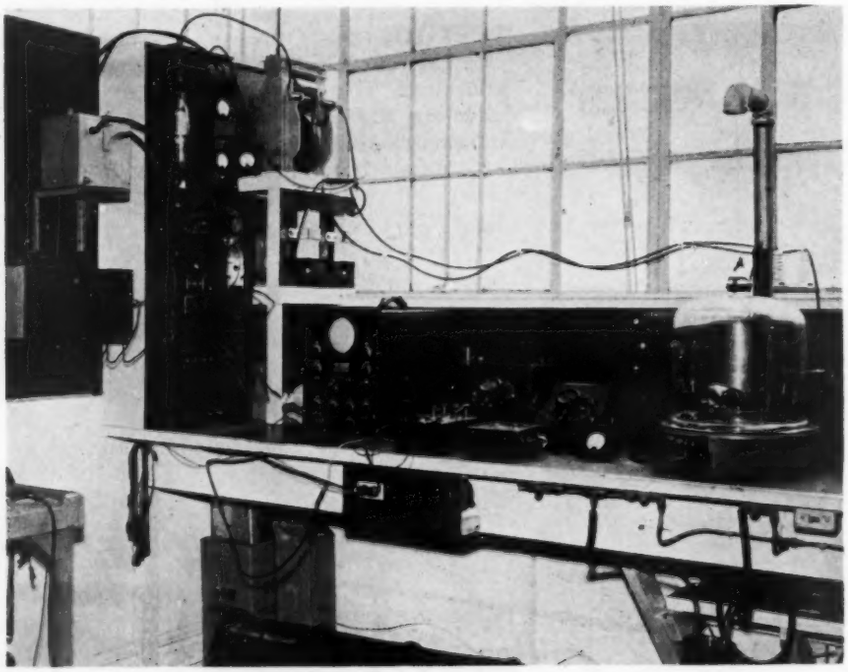
Raytheon Participated in Atomic Bomb Projects

The Raytheon Manufacturing Co., with the approval of the War Department, announced that it is authorized to state "it has been associated with the 'Manhattan Project' and has contributed to the development of the Atomic Bomb."

A.T.&T. Capital Stock Passes $2 Billion Mark

The outstanding capital stock of the American Telephone and Telegraph Co., now held by more than 680,000 stockholders, Sept. 25 passed $2 billion in par value as the result of current conversions into stock of its 3 percent convertible debenture bonds of 1956. These bonds, which were originally offered to stockholders for subscription in 1941 and which were initially outstanding in the amount of $223,548,900, are being converted at $140 per share, payable by surrender of $100 principal amount of bonds plus $40 in cash for each share issued. To date more than $131 million principal amount of the bonds has been converted into stock, leaving approximately $102 million of the bonds still outstanding.

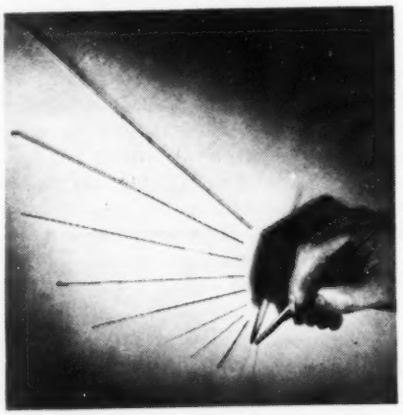
Since the time when the conversion of the bonds first started in 1943, registered holders of American Telephone & Telegraph Co. stock have increased by more than 33,000 men and women. At present the average holdings of the 680,000 stockholders is 29 shares. Nineteen years ago when the par value of the company's outstanding stock crossed the $1 billion mark, the stock was held by approximately 390,000 holders.



Cook Electric relays, switches and other instruments function in cans through Cook's Stratopax method of operation within gas-filled channels. Cook Electric Company, one of the pioneers serving the Independent telephone industry, received national recognition on their wartime secret method of hermetically sealing communications equipment for our armed services to protect it during its entire period of use. "Business Week" in its September 15 issue carried a full report of this new packaging, whose original purpose was to eliminate fire hazards caused by insulation breakdown and excessive arcing in standard electrical controls such as relays, contactors, circuit breakers and switches when operated under low-pressure conditions of high-altitude flight. The idea has been extended to provide trouble-free operation and increased lifetime wherever weather conditions and dust are factors.

Sylvania Welded Wire Products

Welds of multisection wire products made of tungsten, copper clad steel, copper, nickel and copper and nickel alloys are mass produced in sections ranging from .0005" to .1280" diameter by the Warren, Penna., plant of Sylvania Electric Products, Inc.



These welds are suitable for leads, pins and mounts used in incandescent and fluorescent lamps; electron tubes; evacuated and gas-filled switches and many special, hermetically sealed electrical devices. Tungsten, nickel and copper clad wire-products with or without welds to as many as four other metals may be supplied surfaced for direct bonding with glass, all sections are electrically welded to assure good electrical and mechanical design.

Facilities include those for product and tool design, tool production and modern production equipment to assure uniform, high quality products to close specifications. Contact pins for radio tubes, plug-in coils and similar products are also fabricated from solid nickel or tungsten rod with ground or rolled tops and cut to exact lengths for leads, mounts and glass seals. On inquiries for these or similar products please write the Sylvania Electric Products Inc., Warren, Pa.

Cutover to New Office

As a result of a cutover to the new office of the Illinois Central Telephone Company made by W. E. Bown, manager of the local office, Bunker Hill (Ill.) telephone subscribers are enjoying the best telephone service in years. Local operators are enjoying working in their new quarters which are modern in all respects. A public phone booth is a new feature of the building and will remain open 24 hours a day. According to Mr. Bown, there are 235 phones on the Bunker Hill exchange, with about 190 in the city proper.

Radio Course For Telephone Men

(Continued from page 46)

narrow beam. The resistance (see Fig. 107) TR shown at the one end of the rhombic antenna is equal to the characteristic impedance of the antenna. Its purpose is to absorb the remaining energy which reaches the end of the antenna thus preventing it from setting up radiation which would be transmitted in a

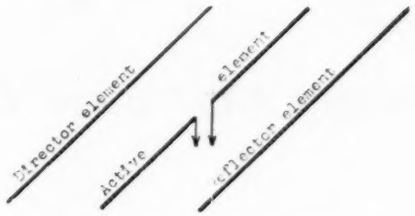


Fig. 106—Antenna system employing director and reflector elements.

direction opposite to the normal directive characteristic of the antenna. In addition to its excellent directivity characteristics the rhombic antenna is capable of operating over a rather wide frequency range. That is, it is efficient at frequencies over a much wider band than its designed fundamental frequency.

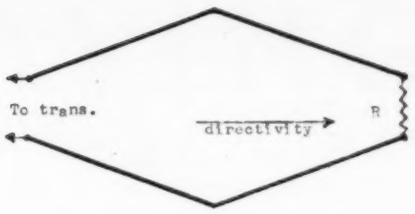


Fig. 107—A rhombic antenna.

This is of particular interest where a rather wide band of radio frequencies may be used in order to get several channels on a single carrier frequency. Properly designed rhombic antennas will give gains of the order of ten to fifteen decibels.

Note—The subject of antennas is covered quite fully in a booklet titled *The A.R.R.L. Antenna Book*. This booklet is available through the American Radio Relay League of West Hartford, Conn. at a price of 50c per copy. This booklet is highly recommended to those interested in antenna systems.

(Part 1 of Chapter 8 will appear in the November 1 FORTNIGHTLY TELEPHONE ENGINEER.

Examination Questions Chapter 7—Phenomena of Radio Transmission

1—Explain the difference between vertically and horizontally polarized waves.
2—Is the ionosphere higher or lower in altitude than the troposphere?
3—What is the difference between the space wave and the surface wave?
4—What causes radio waves to be reflected or refracted?
5—What is the practical effect of tropospheric refraction?
6—What is the advantage of a high antenna when operating at frequencies above 30 megacycles?
7—Compute the transmitting and receiving antenna heights in feet, required to give the equivalent of free space propagation over a distance of 15 miles at a frequency of 156 megacycles.
8—What is the effect of large steel buildings on high frequency radio waves?
9—Are the waves produced by a vertical half-wave antenna horizontally or vertically polarized?
10—What is the purpose of parasitic antenna elements?
11—What is the advantage of a rhombic antenna?

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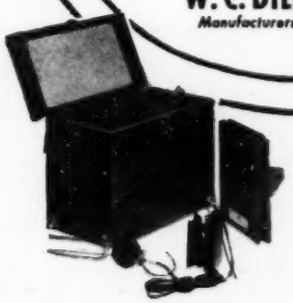

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CONCRETE Telephone Poles

Companies that have tried them say . . .

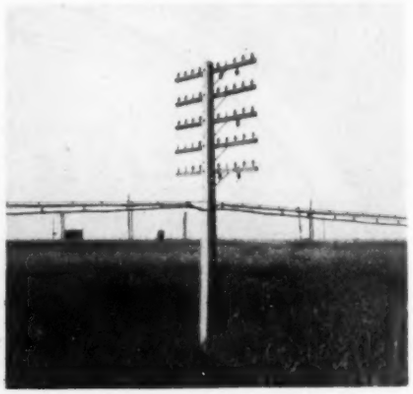
PERIODICALLY someone shows up with the suggestion that telephone poles be made of concrete in place of wood.

The current shortage of pole timber has prompted some telephone men to again raise the question of the suitability of concrete poles for telephone plant use. TELEPHONE ENGINEER & MANAGEMENT has looked back into the record to see why concrete poles have never become popular in the telephone field. Concrete is attractive at first glance because of its freedom from decay. This advantage is largely offset by a number of disadvantages. Greater weight, suspectibility to cracking from frost and difficulty of attaching fixtures are a few of the disadvantages that have held the use of concrete poles down.

History of Concrete Poles

ONE of the earliest users of concrete poles was the Toronto Electric System which used them in its distribution system in 1909. The poles used at Toronto were 24 feet long and were set four feet in the ground. The poles were square with beveled corners. They were 8 inches square at the bottom and 5 inches square at the top. The bevel was approximately ¾ of an inch. Reinforcing steel consisted of four ⅝ inch twisted square bars which were located approximately 1¾ inches from the surface at each of the four corners. Wires were attached to the top of the pole on special brackets which were clamped to the pole. Because the top of each pole carried a street light, a ½ inch conduit was inserted in the center of the pole to carry the street light wires down to the underground conduit.

The cement mix employed was a 1-2-4 mixture.



A concrete pole used in the telephone and telegraph installations on the Pennsylvania Railroad.

The cost of these poles which were made in the period 1909 to 1915 varied from $3.50 to $4.00 each.

A subsequent analysis of the results of the Toronto experiment showed that the pole design was too light and that the reinforcing steel was too close to the outside. In some cases corrosion of the steel resulted in chipping and cracking of the concrete. These poles had sufficient strength to permit a pull at the top of the pole of approximately 450 pounds.

A number of railroads have used concrete poles for their telephone and telegraph lines. The Pennsylvania Railroad for example, installed 202 solid square poles in the Hackensack Meadows along their road between Manhattan Transfer and the Hackensack Portal, west of their tunnels leading into New York City. These poles were placed in 1910 and range in height from 35 to 65 feet. They were designed to transport 60 aerial No. 9, B. & S. gage copper wires and two 1½" diameter lead encased

Cost Analysis of a 30 ft. Concrete Pole

360 ft. of ½" steel rods at 1½ cents	$5.40
4½ bags cement at 83 cents	2.84
7 spacer rings at 9 cents	0.63
½ cu. yd. gravel at 0.25 cents	0.12
Miscellaneous	0.33
Labor	7.86
Total	$17.18

cables. The minimum breaking strength of these poles both from calculation and tests was approximately 4,250 lbs. The tops were 8" sq. and they had a taper of 1" per 5'. The poles were reinforced with ⅞" to 1⅛" steel rods of high carbon steel. The Pennsylvania also installed some 147 poles of similar design on the Williamsport Division, west of their Susquehanna River Bridge. These were designed for a wire capacity of 48 No. 9, B. & S. gage copper wires and two 1¾" diameter lead encased cables. This line was constructed in 1911. The Pennsylvania also has an installation of 30 hollow-spun concrete round poles 30' in height with 5 cross arms on their Baltimore Division at New Freedom. These poles were furnished by the Westinghouse Electric and Manufacturing Co.

Concrete poles have been in use in this country and Canada since the early part of the century. They have been more extensively used for power transmission lines, trolley poles, lighting poles and combination trolley and lighting poles than for telephone lines. The Oklahoma Gas & Electric Co., Oklahoma City, the New York State Railways operating inter-urban lines in Rochester, Syracuse, Schenectady and other New York cities, the Virginia Railway and Power Co. at Richmond, Norfolk and Petersburg, the Toronto Hydro-Electric system and others have installed considerable numbers of concrete poles many of which have now been in service 30 or more years. The City of Milwaukee has thousands of street lighting poles and many combination lighting and trolley poles. Where failures have occurred, they can often be traced to misplacement of reinforcement which has corroded and caused spalling of the concrete.

Experience in New York State

SEVERAL power companies in the State of New York tried out concrete poles similar to those used in Toronto but of somewhat heavier construction. Poles in length up to 45 feet were cast at costs of $17 for a 30 foot pole, $20 for a 35 foot pole and $23 for a 40 foot pole. These costs were based on hand operations and might be somewhat lower if concrete poles were made on a large scale machine operation. However, present day labor costs would probably absorb any savings reflected by large scale machine operations.

The analysis on the opposite page of the cost which went into a 30 foot concrete pole may be of interest.

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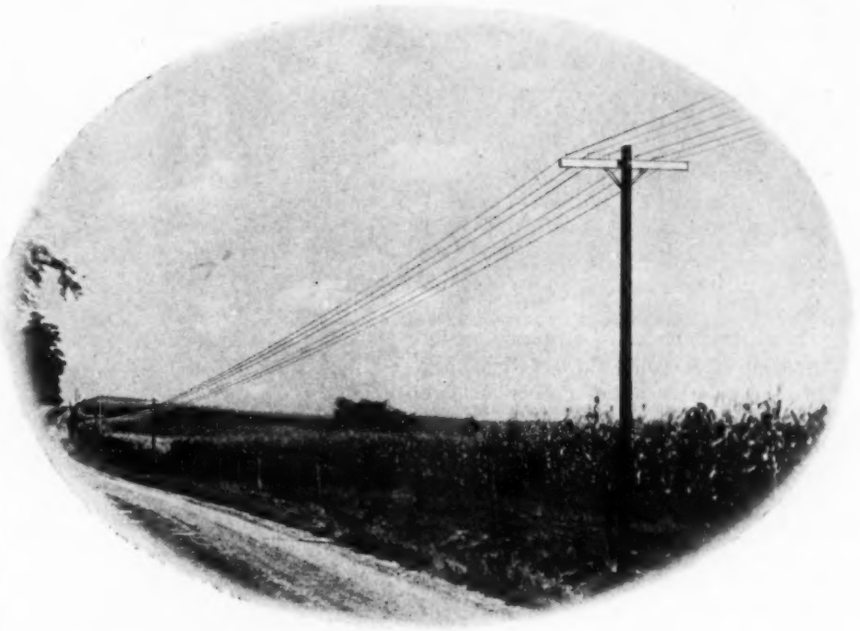

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Centrifugally Cast Poles

AT one time the Westinghouse company manufactured poles by a centrifugal process. These were considered very much superior to the early solid cast concrete poles. These poles were tried out in various sections of the country and in general gave fairly satisfactory service when they were not overloaded. These poles were used primarily in the power rather than in the telephone field. At the time these poles were being tried out it was claimed that the spinning of the pole produced a much more uniform concrete mixture as the water ratio could be controlled much more accurately and this had a substantial effect on the pole.

Load tests conducted on centrifugally spun concrete poles showed that they could stand substantial deflections due to excessive loads and that so long as the elastic limit of the reinforcing steel was not exceeded the poles would resume their original position with such cracks as developed during the loading process being imperceptible when the pole had restored to normal. The poles were able to stand deflections of as much as 12 inches before any discernible cracks showed up.

One of the problems encountered in the manufacture of spun concrete poles was the tendency for the heavier particles to move to the outside and the lighter ones to the inside. An improved process involved slowly revolving the mold during the time of the filling so that a large part of the free water had a chance to work out and escape from the end of the mold. When the mold was spun at high speed the semi-dried concrete was less apt to be separated into "lights" and "heavies."

Experience of Rochester Corporation

AN Independent company that has had considerable experience with concrete poles is the Rochester Telephone Corporation of Rochester, New York. This company has had experience with over 15,000 concrete poles over a period of many years.

A brief history of the development of concrete poles in the Rochester area is that prior to 1914 the local electric company had developed and manufactured ornamental concrete poles for underground street lighting for a number of years, which were found quite satisfactory. Because of this experience, they were desirous of extending their use to the distributing plant. As there was extensive joint use of poles between the lighting and telephone companies, the telephone companies were consulted on the matter. After a joint study and research, a design was developed for experimental joint use, which was based on limitations of 250 volts and for rear lot distribution only. Manufacturing requirements were limited to heights of 22, 25 and 30 foot poles, which would meet the normal needs for rear lot distribution. There were two types of poles developed, one for underground use and the other for aerial construction. Both types were similar in design, being square in shape, tapering from a diameter of 10½inches at the base to about 7½ inches at the top, hollow inside and reinforced with steel rods extending vertically to the top of the pole and including nine horizontal reinforcing straps, all of which were imbedded in the concrete pole. The underground pole was slightly larger, due to encasing a 2½ inch pipe, which extended the greater length of the pole and was used for terminating power conductors at the top of the pole. The telephone company's underground pipe was attached to the outside of the pole in the usual manner by the use of pipe straps.

In designing the pole extreme care was exercised to include in the manufacture provision for the telephone and power attachments in conformity with joint practices, so as to avoid future drilling operations which might affect the life of the pole. The first of these poles was placed in service in 1915 and manufacture was continued from time to time, until discontinued about 1930.

In the middle twenties the Rochester Telephone Corporation began to get reports of defective concrete poles and a spot check of about fifteen percent of the total number was made to determine their condition in the various sections of the city. This check showed that a large percentage had developed cracks and the concrete was spalling off, exposing the reinforcing rods which were badly rusted. Within a two-year period another check was made, which revealed that the condition had greatly increased, and various methods of repair were tried but met with no success. In 1930 the manufacture of concrete poles was discontinued and since that time approximately fifty per cent of the original poles has been replaced and it is estimated within five years about seventy-five percent of the balance will require replacement. The opinion expressed by one of their engineers sums up their experience, viz:

(1) Concrete poles do not weather well and after a few years may start

In the panel photographs are illustrations of the experience of the Rochester (N.Y.) Telephone Corporation in concrete pole installations. They used over 15,000 concrete poles over a period of years. Courtesy Rochester Tel. Corp.

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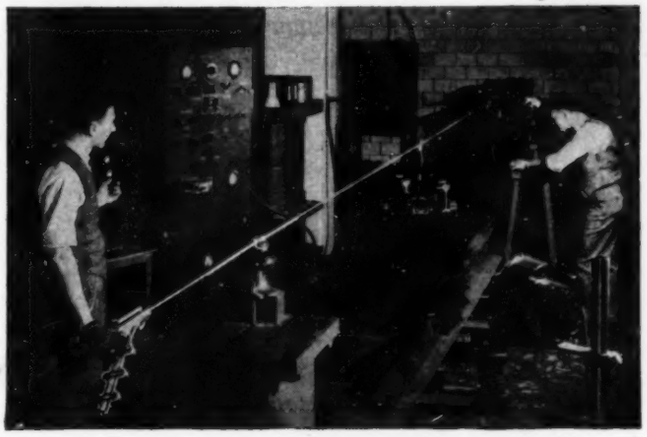

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to disintegrate from moisture and frost.

(2) The cost may be two to three times as high as wood poles.

(3) The life is not as long as for creosoted wood poles.

(4) The poles are expensive to handle due to their greater weight as compared to wood poles.

(5) It is difficult to control the strength of the concrete pole.

Conclusion

THE foregoing information holds no brief for or against concrete poles and is recited mainly for the interest of those who have from time to time contemplated the advantages that might accrue from the use of concrete poles and who may have considered experimenting in this field. Before you engage in any experimental work along this line you might write the Portland Cement Association, 33 West Grand Avenue, Chicago, Illinois, asking that company to furnish such information as it may have on the subject of concrete poles. If any of TELEPHONE ENGINEER'S readers have had any experience in recent years (satisfactory or otherwise) with concrete poles, we should be glad to hear from you.

A rather comprehensive discussion of concrete poles is the paper "Reinforced Concrete Transmission Line Supports" by E. C. Neate and W. F. Bowling in the Journal of the Institution of Electrical Engineers, Vol. 91, Part 2, No. 22 for August, 1944, pages 341-359. Information on pole design, fabrication and erection is included.

Mr. A. J. Boase of the Structural Bureau of the Portland Cement Association can recommend a bibliography of some of the articles which have appeared in technical publications on this subject which we are reproducing only in part. Many references are in foreign publications; however, most of them are available in our large city libraries. As may be expected, concrete poles, owing to the scarcity of lumber, have been used to a much greater extent in Europe and Great Britain than in this country.

Design of Cross-Arms, J. McCombe. Elec. Times, v. 105, n. 2724, January 6, 1944. p. 9-11.

Concrete Poles Replace Baltic Firs, J. McCombe. Elec. Times, v. 101, n. 2633, April 9, 1942. p. 876-9.

Spun Concrete Poles in India Concrete and Constr. Engr., v. 38, n. 3. March, 1943, p. 109-10. Rock Products, v. 46, n 11, November, 1943. p. 98. About 9000 hollow spun poles and standards have been erected in past 2 years.

Manufacture and use of Reinforced Concrete Overhead Transmission Line Standards, J. S. Clinton. S. African Inst. Elec. Engrs. Trans. v. 33, pt. 3, March, 1942. p. 73-7.

Concrete poles in Rural Areas, J. McCombe. Elec. R. v. 122, p. 349-50, March 11, 1938.

Reinforced design for concrete poles. Elec. W., 106: 3186, October 10, 1936.

Manufacture of concrete poles by Hamilton hydro-electric system. A. W. Bradt and W. H. Weller, Can. Eng. 71:9-11, August 11, 1936; Same. Electrician, 116:537-8, April 24, 1936.

Concrete poles for electric railroads. Transit J., 80:101, March, 1936.

Reinforced concrete poles for distribution and transmission lines; abstract and discussion., A. J. Martin., Electrician, 111:809, December 29, 1933; Elec. R., (Lond), 114:13-14, January 5, 1934.

Concrete poles, il., Rock Prod., 36:54, December, 1933. Ferro-concrete; its use for poles and standards, G. W. Molle., Electrician, 112:562, April 27, 1934.

Bell Radar Accomplishments

WESTERN Electric Co. have supplied to the government more than 52,900 radar systems of 64 different types, valued at more than $800,000,000. With the aid of hundreds of sub-contractors to which it provided specifications and details of manufacturing procedure, Western Electric has supplied more radars—all of them of Bell Telephone Laboratories design—than any other manufacturer, it was reported.

Bell laboratories has had a larger group of scientists and engineers than any other industrial organization working through the war in advancing the radar science and in designing new radars for the Army and Navy. Not only have more radar designs come from these laboratories than from any other industrial laboratory, but also a much larger volume of completely new and essential components have been developed there. In all, the laboratories' scientists and engineers have designed some 100 different radars for use by the Army, Navy and Marine Corps in all fields of application, it was stated.

Walter S. Gifford, President of AT&T, reports, "The Bell System's contribution to radar's development and production has grown from the same roots that produced and continue to nourish our nationwide telephone system. It is natural, therefore, that electronic and transmission devices, developed over the years in the extension and improvement of Bell System services, have been drawn upon freely in producing radar.

The Bell System head revealed the following: The Bell laboratories and Western Electric together have had substantially full responsibility for development and production of radars for navy ship gunfire control. All large guns of the U. S. Navy are pointed by radars designed and produced by the two organizations.

Radar systems designed and made by the Bell System research and manufacturing team have been standard for B-29's in the Pacific for navigation, target location and high altitude bombing. In addition, the Bell System developed and produced low altitude radar bombsights used extensively by the Army and Navy in attacking enemy shipping.

Bell laboratories pioneered in the research on electrical computing portions of the radar bombsight and has been responsible for the development of most of those that have had large combat use. With the government-established Radiation Laboratories of the National Defense Research Committee, Bell scientists have shared almost the entire research and development programs of the bombing radars. Much of the bombing problem was made automatic by a new type of computer developed by Bell laboratories.

Western Electric's yearly output of radars reached a record high of 22,000 in 1944. These units, together with components, spare parts and test equipment, were furnished at a value of $340,000,000 —an amount equal to almost $1,000,000 for each day of the year. This record was greatly exceeded during the first six months of 1945, when Western Electric turned out 19,800 radars.

Urgent requirements of the armed forces were responsible for the fact that Bell laboratories in 1944 was at work on 81 different types of radar systems, and that Western Electric produced 44 different types, of which 20 were new in production that year.

One of the important phases of the Bell System's contribution to the armed forces' radar program was the school for war training conducted by Bell laboratories in New York City. There, some 4,000 officers and men of the Army and Navy were instructed in the intricacies of military electronics, chiefly radar.

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Radio Channel Applications In The Telephone Field

(Continued from page 38)

carry on a conversation in the usual manner but would not be able to receive incoming signals. While this service would not be all that might be desired it would, in many instances be satisfactory if commercial power is not available.

Another problem that occurs in connection with rural and mobile radio telephone service is whether or not such service should be offered on a "push to talk" basis. On a *push to talk* basis the rural subscriber or mobile user would be required to push a button when talking and release it when listening. The push to talk feature simplifies the equipment problem and is the type of service most likely to be rendered.

The connection of a two-wire telephone line to a radio link for what might be termed "four-wire operation" requires the use of balancing networks similar to those used in connection with telephone repeaters. These serve to separate the receiver and transmitter paths at the junction of a two-wire telephone line and a radio link. This introduces a further complication; however, one that can be satisfactorily met.

If Independent telephone companies are to make use of radio channels there is the further problem of training personnel. Radio equipment is much more complicated than ordinary telephone equipment and requires technically trained personnel for satisfactory maintenance and operation. Generally men can be found in the average telephone organization who are glad to specialize in this type of work.

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Suggested Procedure in Applying Radio Channels to the Telephone Plant

TELEPHONE companies contemplating the application of radio channels to a specific telephone plant may find the following suggested procedure steps helpful. These relate to the general considerations involved in the use of radio in the telephone plant.

(1)—A commercial survey and study should be made of the potential field of use for radio in the given telephone network or community. This study should take into account the probable need and demand for the service; the economic features of providing it and general methods of promoting it once it is available.

(2)—If the commercial study indicates the desirability of using radio channels for one or more specific purposes, an engineering study should be made to determine: (a) the number of frequencies initially required; (b) the radio frequency power needed; (c) the antenna structure problem; (d) mode of operation; and (e) frequency band most suitable considering local terrain conditions.

(3)—Upon completion of the engineering study and preliminary plans an application should be made to the FCC for specific assignments in the desired bands.

(4)—Personnel should be trained for the maintenance and operation of the radio equipment. This training should be sufficiently complete that the individuals taking it can qualify for the necessary *operator's license* that is customarily required by the FCC. In the past the FCC has always required that licensed personnel be responsible for maintaining the radio equipment on its assigned frequency.

(5)—Discussions should be held with your Independent telephone manufacturer on the problem of suitable radio equipment. The leading Independent telephone manufacturers are familiar with the problems involved in adapting radio equipment to telephone applications and can be depended on to make sound and conservative recommendations.

(6)—It will probably be desirable to make the initial service available on a limited scale using a few cooperative subscribers.

This will give an opportunity to work out the preliminary faults and particularly to discover unusual terrain conditions which may adversely affect wave propagation.

Bell Proposes to Purchase Pennsylvania Exchange

Approval of the purchase of the Indian Ridge Rural Telephone Co. by the Bell Telephone Co. was asked in a petition to the Pennsylvania Public Utilities Commission recently. The proposed price is $6,200. The rural company operates in lower Carbon county.

The Indian Ridge serves 154 subscribers in Parryville, and Towamensing and Franklin townships. These subscribers are served through the Bell's Lehighton exchange under an arrangement made many years ago when the Indian Ridge was organized.

Like the Bell's Lehighton exchange which is part of the Allentown division, the addition of the Indian Ridge company will place this service under the direction of the Allentown office headed by William Davidson. The latter said that existing facilities will be rehabilitated and that though the switchover will mean no change to the subscribers, the service is expected to be improved under the Bell's expansion program.

New Rates for Rural Company

The Farmers Interurban Telephone Company, Rock Dell, Minnesota, has been authorized by its state commission to increase its rural multi-party line rate 25c, effective the first billing date after September 30. The new gross rates are $1.50 per month with a 25c discount if the semi-annual charge is paid on or before April 1 and October 1.

Western Arkansas Telephone Co. Classified As Connecting Carrier

The Western Arkansas Telephone Co., a Class C Independent, was reclassified by the FCC Sept. 18 as a "connecting carrier" within the meaning of Section 2(b) (2) of the Communications Act and the proceedings on the alleged financial control by the Southwestern Bell were terminated and dismissed.

The Western Arkansas Telephone Co., through its president, S. A. Lane, informed the FCC several months ago that all of the preferred stock which was owned by the Southwestern Bell had been called in and that he owns a majority of the common stock. In 1936 the FCC had held the company under its jurisdiction because of the Southwestern Bell financial interests as the preferred stock was entitled to voting rights in the event of common stock dividend payment failures. It was alleged that the Southwestern Bell also had designated most of the officers and directors of the company.

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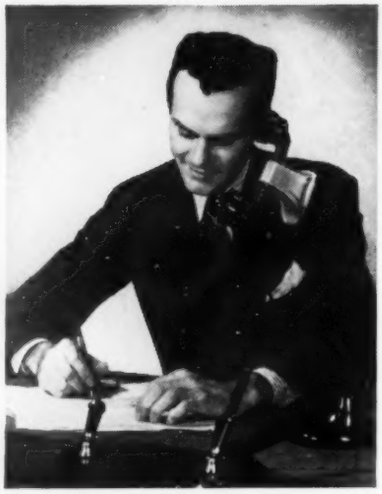

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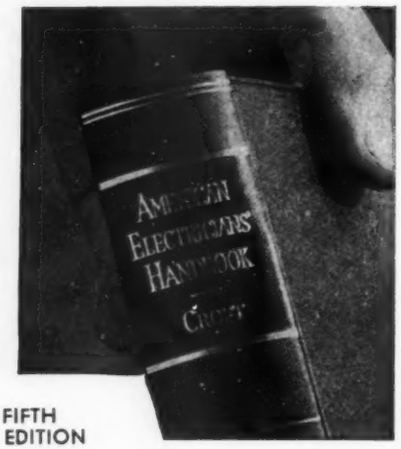

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HANDBOOK TABLES

Index—Cable Splicing Data
Date—October 15, 1945

Lead Sleeve Dimensions for Various Sizes of Telephone Cable

In cable splicing operations, it is important to select the proper size of lead sleeve to use for a straight or bridge splice on a particular size of cable. The sleeve should be of the proper length to cover the opening in the cable sheath (at least three inches on each side of the splice) and should be sufficiently large to go over the diameter of the spliced core of the cable. Table No. 1 gives the dimensions of lead sleeves for straight splices and Table No. 2, which will appear in the November issue, gives the dimensions for bridge splices. If a split sleeve is to be utilized, the sleeve selected should be a size larger than that required for the particular size of cable listed.

TABLE NO. 1—DIMENSIONS OF LEAD SLEEVES FOR STRAIGHT SPLICES.

Gauge Size of Cable	Pair Size of Cable								
	15 pr.	25 pr.	50 pr.	100 pr.	150 pr.	200 pr.	300 pr.	400 pr.	600 pr.
19 Gauge:									
Length of Sleeve	15 "	15 "	15 "	17 "	20 "	20 "	20 "	20 "	
Inside Diameter	¾"	1 "	1½"	2 "	2¼"	2¾"	3½"	4 "	
22 Gauge:									
Length of Sleeve	15 "	15 "	15 "	15 "	17 "	17 "	20 "	20 "	20 "
Inside Diameter	¾"	1 "	1¼"	1½"	2 "	2¼"	2¾"	3 "	3½"
24 Gauge:									
Length of Sleeve	15 "	15 "	15 "	15 "	17 "	17 "	17 "	20 "	20 "
Inside Diameter	¾"	¾"	1 "	1½"	1¾"	2 "	2¼"	2¾"	3½"

Highlights of the Communications News

(Continued from page 31)

consumer to the workers on the industry. Granting that telephone subscribers are entitled to low rates only if they are fair, he asserted a rate cannot be fair to the public if it is based upon the suffering and privations of the people who must furnish that service by personal labor.

After noting the lower level of wages for Southern Bell employees on the basis of pay before the pending NWLB adjustment decision, Mr. Kane stated that it is believed, before the NWLB goes out of existence, all of the Bell System companies will have raised to a minimum of 50-cents an hour. But even with all the wage changes by the National Telephone Commission, a very large percentage of all of the telephone operators in the country will be receiving less than 65 cents. It was estimated, he cited, that a total of 74% of the Bell System operators now receive less than 65 cents an hour and of the one-third of the operators on the highest wage schedules some 60% receive 65 cents or less per hour.

Approximately one-half of the commercial and accounting employees of the Bell System companies earn less than 65 cents. Only three percent of the plant department workers in the Bell System receive less than 65 cents, but this is due to the fact that about 80% of the plant employees have been with the Bell companies for such periods of time as to have reached the tops of the progression schedules.

Outside of the larger Independent companies the great majority of **all** employees in the Independent industry receive less than 65 cents, Mr. Kane emphasized. He declared that the Senate Committee must learn the Bell System does not operate the nation's entire telephone industry and there are many Independent companies and groups of companies "which are large and profitable business enterprises." He urged that many of the Independent companies "should be as well able as Bell System companies to pay that minimum wage, whether it be 65 cents or 75 cents, which Congress may specify."

Procedure for Rate Determinations in Wage Boosts by NWLB Working

THE Standing Price Relief Committee of the War Labor Board has been given authority by the Office of War Mobilization and Reconversion to approve the voluntary cases referred by the National Telephone Commission which involve the question of rate relief but which can be decided under the old WLB policy existing prior to the issuance of the Executive Order on August 18. Most of the Telephone Commission's voluntaries involving relief (which are the only ones now requiring WLB approval) fall into this category and about 45 cases have already been approved in this way.

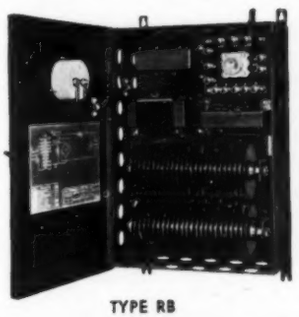
Approximately 90 voluntary agreements are still to be acted upon by the Commission with 50 of them having arrived before August 18. Cases which cannot be acted upon under the old policy which are very few will have to be referred to the OWMR.

The Telephone Commission recently sent a letter to all parties to its dispute cases asking them to advise the Commission as to which method they thought most suitable for deciding the approximately 24 cases it has left to consider. The first method suggested by the Commission was to go back to collective bargaining and the Commission offered its assistance to the parties in bargaining so as to withdraw cases from its docket. The second method was that the Commission should decide the dispute on the old policy with a wage re-opening clause. The third method is to decide the case under the existing wage policy. No new telephone stabilization policy will be developed but a case-by-case procedure will be followed.

Thirteen of the remaining dispute cases are still to be heard by the Commission. Only one of the parties, the Ohio Bell, has asked that their case, already through hearings, be decided under existing Board policy. Six hearings are scheduled for cases to which the parties have agreed to have decided on the old policy with the wage re-opening clause. They were: The Mansfield, O., Telephone Co. on October 9; the A.T.&T. Long Lines, Southern Division, on October 11; the Michigan Bell Telephone Co. on October 18; Chesapeake & Potomac Plant, Commercial, and Accounting Departments, on October 23; Northwestern Bell on October 25; and Wisconsin Telephone Co., Plant Department, on October 30.

Four other cases will be submitted on briefs: The A.T.&T. Long Lines on maintenance of membership and three Southern California Telephone Co. cases covering Commercial and Accounting Departments. The New Ulm, Wis., Rural Telephone Co. case will be heard by a hearing officer from the Chicago Regional Board. The Cincinnati and Surburban Bell has gone back to collective bargaining.

A new industry member has been appointed to the Commission representing the Bell System. He is George M. Fowler, general plant manager of the Long Island area of the New York Telephone Co.



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Saunders Made Engineering Manager of Kellogg Switchboard

James G. Kellogg, president of the Kellogg Switchboard and Supply Company, has announced the appointment of Norman H. Saunders as engineering manager, replacing R. M. Kalb, chief

Norman H. Saunders

engineer, who recently resigned. Mr. Saunders assumes full charge of all research, development, design and general engineering of Kellogg products.

Kellogg's new engineering manager is well known in the Independent telephone industry through his many years of engineering work and numerous articles on various phases of dial switching equipment. For several years, Mr. Saunders was an instructor in machine switching circuits.

Mr. Saunders was a colonel in the United States Army Signal Corps during World War II, and his return to Kellogg Switchboard and Supply was reported in the July issue of TELEPHONE ENGINEER

New Dial Service

Officials of the Indiana Associated Tel. Corp., Lafayette (Ind.) recently released plans for improving and expanding telephone service by installing modern dial equipment at the Lucerne exchange. The complete installation including extra trunk lines to Logansport to assure promptness in the placing of toll calls should be completed within a year.

The dial equipment, featuring selective ringing for party and rural lines, will be housed in a new building to be erected near the site of the present one. The exchange will be unattended.

C. M. Rice, district manager of the Telephone Company, states that in the face of increasing wages and material costs over the past few years, and in view of the investment involved in giving Lucerne a modern telephone system, it will be necessary to seek the authority of the Indiana Public Service Commission to make some slight increases in the rates for service. The new rates will permit an unlimited number of calls of five minute duration from Lucerne to Logansport.

Telephone Company representatives called upon present customers to review the proposed rate schedule and to secure their endorsement. Prompt action in signing the petition endorsing the program will eliminate delay in securing the authority of the Commission to obtain the rates which will be necessary for the installation of the new equipment.

Army "Switchboard" Can Fit Into Pocket

A telephone switching unit, so compact that the operator can carry the parts in his pocket or in a pouch of his cartridge belt, has been put into service by the army.

The unit, used where it is not practical to carry regulation switchboards, such as in the field while under fire, was first developed by the Signal Corps so front-line telephones could use lights as signals instead of bells, which can be heard for considerable distance by enemy snipers. Afterwards, it was found that the new unit could be used as a substitute emergency switchboard.

The operator can make not only individual connections, but conference connections by calling the desired parties individually and then connecting a number of plugs together.

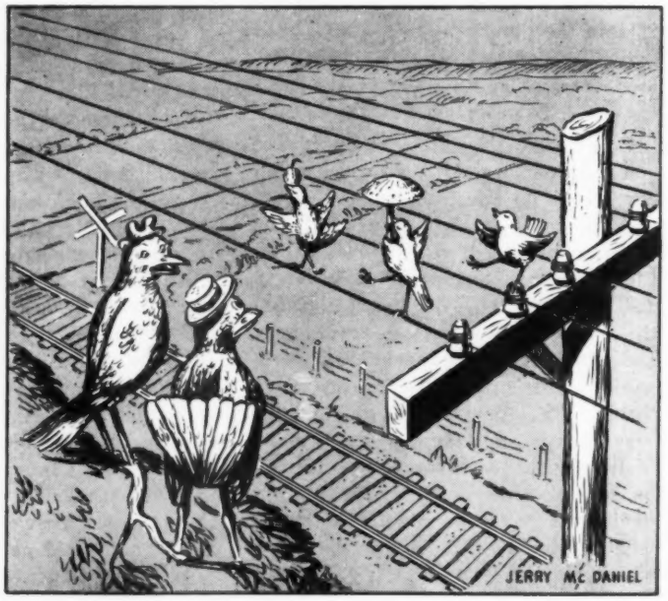
Resurfacer for Worn Floors Of All Types

A new six-page folder, just issued by the Tufcrete Company, describes the uses of Tufcrete Resurfacer, indoors or out, on worn floors of wood, concrete, brick, asphalt, stone, etc., either for patching or a complete new surface. Also for sidewalks, especially over areaways in front of stores, for steps, expansion joints, concrete window sills, platforms, ramps, columns and beams, reservoirs and tanks, etc.

Tufcrete is described as an asphaltic-base liquid which, added to a concrete mixture, will bond to concrete, wood or other floors, both bottom and edges, will feather-edge perfectly and stand up under heavy-traffic. Requires no chipping of ruts or holes, no heating of materials, no expensive tools, can be installed by ordinary labor . . . . applied to worn aisles and runways without removing stock, work benches, storage bins, or machinery set in place.

Tufcrete Resurfacer is used by industrials and Class One railroads from coast to coast, also Army Posts, Air Bases and Naval establishments throughout the country. Laid on Saturday, is ready for traffic on Monday. Resilient, easy on feet . . . nonferrous, fire resistant, insulating, vermin and termite proof. Costs less than replacement of wood or concrete floors.

Write Telephone Engineer Publishing Corp., Chicago 26, for your free copy of this booklet.

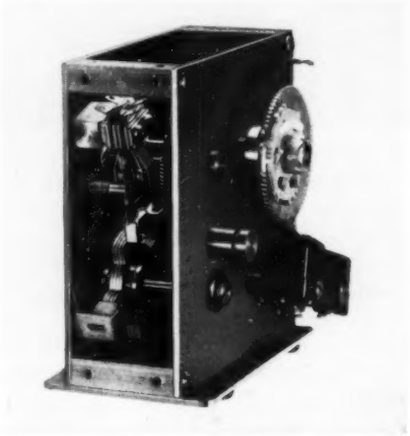


"Maybe we made a mistake flyin' around that circus."

New Constant Speed D.C. Motor

Small enough to be held in the palm of the hand, a new Constant Speed D. C. Motor has been developed by the Amglo Corporation of Chicago to supply A. C. motor performance to the D. C. market. The new motor is especially adaptable to synchronous operation formerly possible only through the use of A. C. current.

Because of its simplicity of design,



The new constant speed D.C. motor developed by the Anglo Corporation of Chicago to supply A.C. motor performance to the D.C. market.

the Amglo Constant Speed D. C. Motor has been made available for use at 1½, 3, 6, 12, 24, 32, or 110 volts. Constant speed is maintained even in the case of storage battery operation where the voltage is higher when the battery is being charged. Description and complete literature covering this new Constant Speed D.C. Motor can be received by postcard request to New Products Editor, Telephone Engineer Publ. Corp. 7720 Sheridan Road, Chicago 26, Ill.

General Cable Contributes in Atomic Bomb Project

A notable link in the chain of contributing accomplishments by American industry and its engineers that combined to produce the atomic bomb has come to light with the announcement of a new type of material manufactured exclusively for the Oak Ridge, Tennessee Bomb Plant by General Cable Corporation.

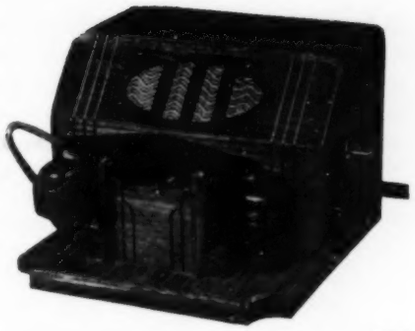
According to the announcement made public recently by Dwight R. G. Palmer, president, General Cable engineers and research specialists were called upon to design a special product that would meet unprecedented requirements. These requirements were unique, complex, severe and vastly different than ever before required. It had to contain many different components, vastly different in nature than any encountered previously.

Following several months of intensive and secret research, General Cable engineers submitted a new design embodying highly advanced developments in construction. This new material was accepted by the scientists and engineers associated with atomic bomb project. Following exhaustive tests it met all its severe requirements, it was shipped under guard, installed and placed in operation at the Oak Ridge Plant.

Production of the new product at the Bayonne Plant of the General Cable Corporation involved unprecedented manufacturing operation and required the development of entirely new techniques.

Although complete details of its construction are secret for obvious reasons, the design precedent which has here been set holds out promise of beneficient post-war use.

In addition to its contribution to the atomic bomb achievement, General Cable has played a major role in many vital war production projects inciuding the engineering and production of one continuous, 35-mile-long stretch of hollow, armored submarine cable that was used as a major unit of the English Channel pipeline.



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No. 335—5 bar, 1600 ohm.... 19.45

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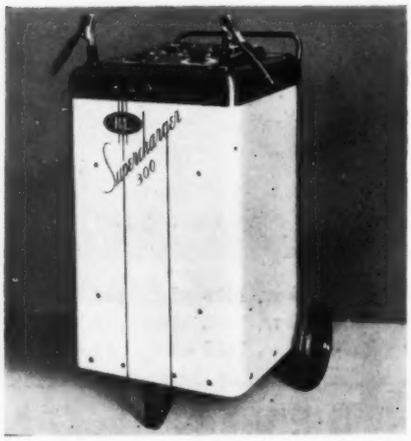
"STILL IN THE LEAD"

In Production on Supercharger

The Benwood-Linze Company of Saint Louis is again in production of the Fast Battery Supercharger, in the development of which they pioneered in 1937. They achieved the distinction of many "firsts" in the pre-war introduction of this line: extreme portability, the Time Control Switch, a built-in Discharge Unit, special Battery Clips, automatic Time Clock and Time Switch controlling High Rate Charge, being some of them.



The postwar model today, priced at $219.50, embodies many new original special engineering features. Benwood-Linze's announcement indicates that this new model contains many improvements which are the result of continuous engineering research, plus experience gained in the production of war equipment requiring precision and exacting tolerances. For their military production achievements Benwood-Linze was awarded the Army and Navy "E."

The function of the Fast Battery Supercharger is to deliver Direct Current of the required rating for the quick no-removal charging of storage batteries, in an automobile or elsewhere. Maximum time required averages 20 minutes. In addition, the Supercharger detects and registers shorted and defective batteries, sulphated batteries and provides for the elimination of sulphation.

For further details, send a postcard to the Benwood-Linze Company, 1815 Locust St., St. Louis 3, Mo.

Patron's Complaint Causes Inquiry

The Wisconsin Public Service Commission is investigating a complaint signed by 96 patrons and stockholders of the Belmont and Pleasant View (Wisconsin) Telephone Company. The Commission deemed it necessary to investigate the books, accounts, practices and activities of the company.

Breaking ground for Philco's building expansion program to take care of its huge battery requirements. M. W. Heinritz, vice pres. in charge of the storage battery division, is looking over the plans with Simon Belli and K. C. Meinken (far right).

One Vote Kills Consolidation of Two Rural Companies

Efforts to consolidate the Wind Lake (Wisc.) Telephone Co. and the Burlington, Rochester & Kansasville Telephone Co. were defeated for the second time recently when, by the narrow margin of one vote, stockholders of the Wind Lake company voted against purchasing the Rochester company.

The move for the consolidation of the two companies was fostered by Waterford business men, who are now obliged to have phones of both companies to serve their trade territory. It began when the Wind Lake company applied for permission to install a new switchboard and extend its services.

Agitation was started to consolidate the two companies, but no plan could be agreed upon. An attempt was made to have the Rochester company purchase the Wind Lake company, but the latter would not sell.

Finally Capt. Robert Wallis, now with the armed forces in Europe, who is owner of the Rochester company, agreed to sell his holdings to the Wind Lake company for $30,000 and the transaction was approved by the Wisconsin public service commission at that price. At the first meeting the purchase was voted down because of a question of stock voting rights. This was straightened out and the second meeting held with the above results.

Waterford business men are still hopeful that the companies can be consolidated and are working on new plans.

Sylvania Promotes G. Dallas Rand

G. Dallas Rand, formerly assistant division manager of lighting products for Sylvania Electric in Washington, D. C., has been appointed Capital Division manager, following the transfer of George R. Sommers to the Pacific Coast.

Robert H. Bishop, general sales manager for lighting products, made the announcement.

Mr. Rand became assistant Washington manager early this year after covering sales for the company in Virginia for two years. Prior to joining Sylvania, he was on the engineering staff of the Virginia Electric & Power Company of Richmond, and received his education at Virginia Military School and Williams Law School.

Convoy of four-wheel and six-wheel drive International trucks on its way across Okinawa. Now occupation and troop movements make use of these efficient vehicles. U. S. Marine Corps photo.

Kellogg "Technical Observer" Home

Don H. Erickson, Kellogg Switchboard and Supply Company engineer, has returned to duty at the company's clearing plant after 11 months with the Army Signal Corps on the European warfront.

Don Erickson

Serving as "Technical Observer," in identification, repair, installation and operation of army telephone switchboards, Mr: Erickson covered the entire strategic battle areas of the war theatres to which he was assigned.

Rhineland Network

An efficient police radio network to provide communications between local district headquarters and the fleet of motor vehicles, consisting of eleven fixed stations and 300 radio-equipped vehicles, was installed and placed in operation in 27 days and covers an area of approximately 14,000 square miles in the Rhineland area. It is believed to be the largest frequency modulated police radio network in the world, as well as having been designed and installed in the shortest time on record. Both the mobile and fixed installations for the Rhineland network were established by teams of the 193rd Signal Repair Company.

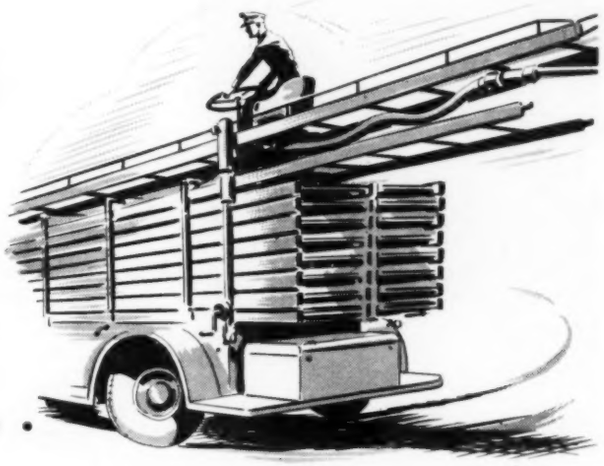
To provide effective Signal coverage, eleven 250-watt fixed stations were installed on hilltops along the Rhine Valley. One of these was a standard 250-watt police radio station, the others had to be improvised from standard 50-watt police equipment with a 250-watt power amplifier. Remote control facilities were provided, using modified German telephone line amplifiers and Spiral-4 Cable over distances between 1 and 5 miles. One pair of the Spiral-4 was used to control the transmitter relay and the other for the audio line to connect the loudspeaker and microphone in the Provost Marshal's office to the transmitter and receiver.

The equipment for many of the fixed stations was installed in shelters, in order to provide protection for the operators and equipment, since most of these stations are located at points where no suitable buildings were available.

The radio vehicle fleet consisted of approximately 50 jeeps and 250 armored cars. Radio equipment installed in the jeeps was standard 25-watt frequency modulated police radio sets mounted in specially constructed steel cabinets, for protection against the weather.

The entire network operates on a single frequency. From each Corps Hqtrs. direct communication is maintained with four district stations, any one of which can have direct two-way communication with any car within its range. The district stations are separated between 11 and 60 miles, and each has an effective radius of communication of approximately 30 miles, depending upon local terrain. Instances of communication up to 47 miles have been recorded. Since the system operates on a single frequency, any station may act as a relay station for another, in order to provide communications with mobile units which may be out of range of their own particular fixed station.

The Guy Who Steers the Back Wheels . . .



Fire! the siren screams and the big hook and ladder outfit comes howling down the street. And there at the very end of the long vehicle he sits . . . the guy who steers the back wheels. It loks important but he has no real control over the destination of the vehicle. He's only playing follow the leader.

One of the fundamentals of sound business management is to select capable department heads and branch managers, men with the "KNOW-HOW" to get the job done right. Then they can use their own initiative and you'll get results.

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Stromberg-Carlson Doubles Output

Finished phones ready for shipment to Independent telephone company customers of the Stromberg-Carlson Company, Rochester, New York are pictured below, evidence of the huge civilian production line in full operation.

Stromberg-Carlson recently announced that its high wartime telephone equipment output was being doubled to keep pace with the rate of orders.

Emily Donaruma holds three of the phones she helps to assemble at the Stromberg-Carlson Rochester, New York plant, first to be made for civilian use since shortly after Pearl Harbor.

U. S. Rubber Develops New Packaging of Wire

The United States Rubber Company is now producing telephone wire which can be laid from an airplane.

At present the Army is taking the supply, but with the war over, this type of packaging may have value to telephone companies who wish to pay out the wire from a truck or plane.

The key to the development is in the method of packaging the wire. Instead of being rolled on a reel, it is coiled in a container without a core and the end comes out from the inside as in the case of certain kinds of wrapping twine. It can be payed out at varying speeds without backlash or knotting.

Each coil contains about 3300 feet of wire and the coils can be hooked up in series in an airplane to permit the laying of a continuous five mile circuit. This application was particularly useful in the CBI theatre, where troops who formerly laid wire by hand from a reel faced such obstacles as jungles, swamps and mountain ranges.

To get wire circuits across a river, the bazooka method has been used with success. The coil of wire is placed on the ground and one end is carried with the projectile fired out of the bazooka.

Wire coiled by the new method can also be played out from a truck.

Pneumatic Hammer Available

A small, powerful pneumatic hammer, delivering some 13,000 blows per minute and operating on less than 2 cubic feet of air at 80 to 100 PSI, will be released for general distribution for the first time this month. You may obtain a four page bulletin describing the hammer in detail by postcard request to the new products editor, Telephone Engineer Pub. Corp., 7720 Sheridan Rd., Chicago. Originally designed for special applications where an exceptionally small tool with plenty of power and long lasting qualities was demanded, the air hammer has heretofore been sold by the manufacturer, Superior Mfg. Company, almost exclusively to war production plants.

Weighing less than two pounds, the "Bantam Bully" hammer fits easily in the hand. A pistol grip handle, of dimpled aluminum casting, gives the operator comfortable control of the rapid-firing power of the hammer. The valve control, in pistol trigger position, adds to the ease of control.

Tools for the hammer, of which a wide variety are available, are loaded in a quick-acting ball-and-channel locking chuck. A quarter-turn of the knurled nose of the chuck locks or releases any of the tools. The Bantam Bully hammer has but one moving part, the piston striking member, which is precision-fitted in a finely ground cylinder. Travel of the hammer piston is approximately 3/8" and normally operates between 12,000 and 14,000 blows per minute, depending upon the trigger regulation and the air pressure available.

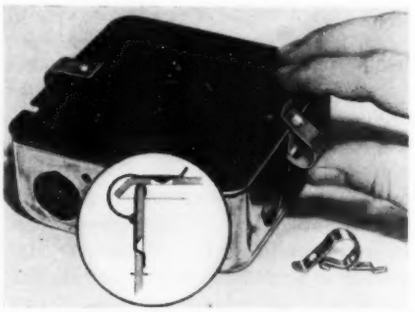
The Bantam Bully Hammer is a powerful pneumatic hammer but weighs less than two pounds. A valve control, in pistol trigger position, adds to the ease of control.

Michigan Manager Enters Service With Military Leave

Paul A. Lockwood, district manager of the Michigan Associated Tel. Co., with headquarters at Coldwater, Mich., has been granted military leave of absence by the company and has entered the armed forces. W. G. Treloar, employed in the plant department for the past five years at the Muskegon exchange, is acting district manager for the 23 exchanges.

New Box Cover Fastener

A spring steel fastener for box covers that eliminates all screws, nuts and rivets, as well as tools for attaching is now available from Tinnerman Products. The clip is self-retaining and need only be snapped by hand into pre-punched holes in the sides of the box. It is low in cost, light in weight and installed quickly. By merely flipping the clips into locked position, the cover is held firmly in place as shown in the illustration. To remove the cover, the clips are unsnapped by merely pushing them back with the thumb. These new clips are entirely outside of the box with nothing inside to obstruct or damage wires or other equipment.



It is available for use on sheet metal, die cast, plastic or plywood boxes of varying wall thicknesses. Write for samples of this new fastener today and please advise (1) material (2) thickness of box and cover and (3) whether loose fitting or close fitting cover. Address your card to Tinnerman Products, Inc., 2017 Fulton Road, Cleveland 13, Ohio.

Purchase Rights Confined

The Minnesota Railroad & Warehouse Commission has vacated its order of August 21, 1945 denying the joint application of J. C. Steinhagen to purchase and Peter Giesler to sell the Dodge Center (Minn.) Telephone Exchange; and the sale was permitted after the necessary reports, that were requested filed with the commission on October 1, were gone over by the commission.

Safety Contest Shows Accident Percentage Increase

Accidents to all public utilities fleets enrolled in the National Fleet Safety Contest were up 19 per cent in 1944-45 for a total of 2,158 mishaps as compared with 1943-44, the National Safety Council now reveals in announcing the winning fleets in the public utilities' division of the contest.

Nine winning fleets and three honorable mentions came through the contest year without a single accident.

Top honors in Group II went to the Shell Pipe Line Corporation, Telephone and Telegraph Department, Houston, Texas, and the Oklahoma Power and Water Company, Sand Springs, Okla., was the winner in Group III.

The 19 per cent increase for public utilities fleets represented an accident rate of 1.80 accidents per 100,000 miles of travel. Despite the increase, this is considerably better than the overall average of all fleets enrolled in the contest which had a rate of 2.24 accidents per 100,000 miles. Fleets in the public utilities division rolled up a total mileage of 14,289,000 miles, during the 12 month contest period ending June 30, 1945.

In this year's National Fleet Safety Contest, 1443 fleets with 102,901 vehicles participated. This is an increase of 183 fleets over the number entered in last year's contest. The accident rate for new fleets in their first year of participation in the contest was 120 per cent higher than that of the old fleets, the Council revealed.

The wear and tear of wartime driving was evident in all vehicles in the contest which experienced 34,926 accidents while rolling up more than a billion and a half miles.

New York Telephone Accounting Argument Tentatively Set

Oral argument in the New York Telephone Co. accounting case is tentatively scheduled by the U. S. Supreme Court for November, 1945. The case is being heard by the Supreme Court on an appeal by the Federal Communications Commission from a decision Aug. 24, 1944, by the United States District of New York.

The controversy involves accounting procedures followed by the New York Telephone Co. in connection with puchases of equipment from A.T.&T. during the years 1925-28, prior to the transfer of jurisdiction from the Interstate Commerce Commission to the FCC in 1934. An FCC order in December, 1943, found that the accounting of the New York Telephone Co. was not in accordance with the FCC Uniform System of Accounting for Class A Telephone Companies, and resulted in purely inflationary write-ups of the accounts.

This order was reversed unanimously by the New York District Court, which held that the entries, when made, were in complete accord with the applicable rules and regulations of the predecessor ICC's accounting system in force at the time. If the Commission's contentions are upheld, the surplus account of the telephone company would be liable to reduction by $4,166,510.57.

Plans New Building And Automatic Equipment

The Dunkirk-Fredonia Telephone Company are planning a new telephone building in the village of Fredonia, N. Y., to be finished near the middle of 1947. The structure and equipment will cost in the neighborhood of $170,000, and Arthur Maytum, president of the company, states that they expect to have the materials to start construction by 1946. The building will be the last word in construction and equipped with the very latest in an automatic system.

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Tests Everything Electrical from 100 to 550 Volts
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Lifetime guarantee. List $1.50. Purchase thru regular electric- dealers. Pat. No. 1,778,883.
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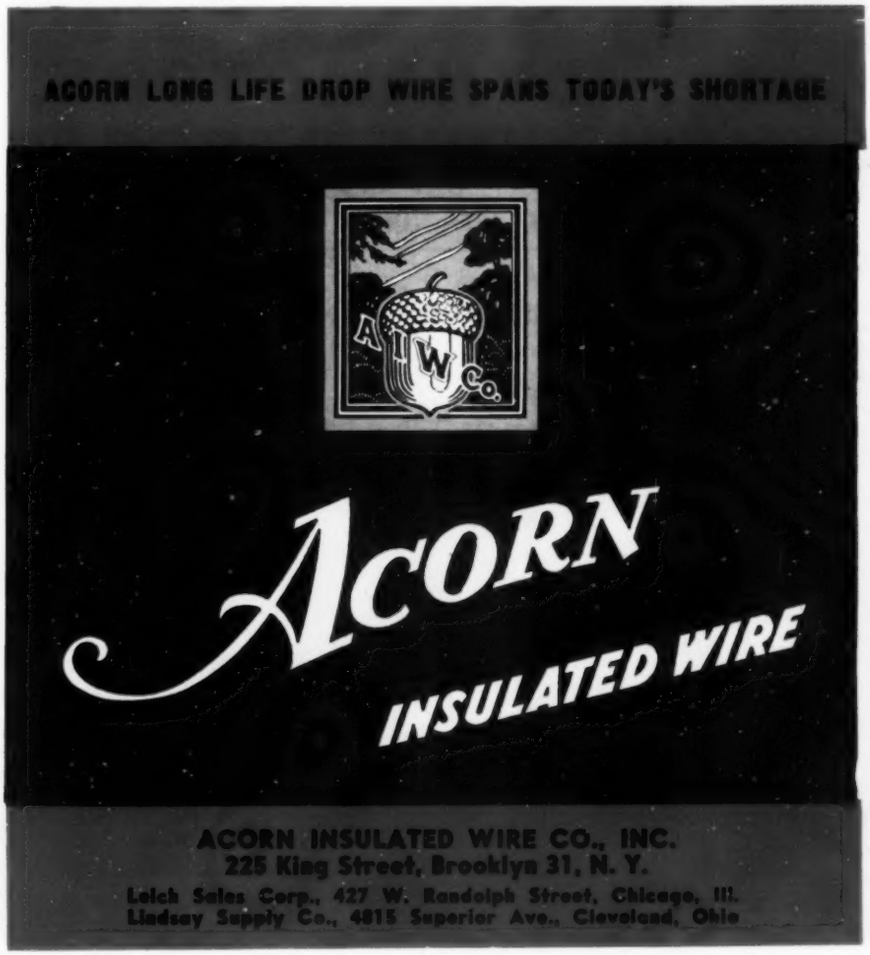
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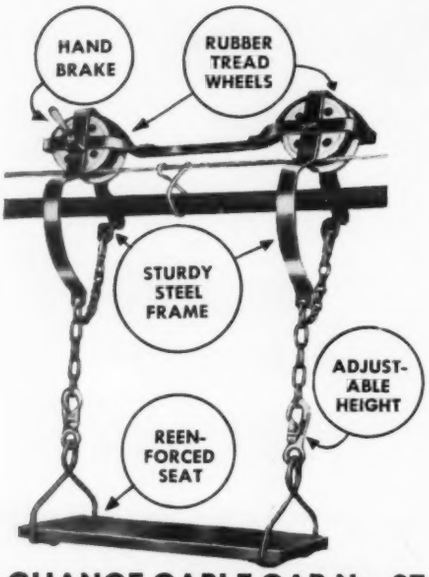

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Strowger Automatic Telephone Equipment for Large Venezuelan Oil Field

Announcement has been made by International Automatic Electric Corporation, export distributors for Automatic Electric Company, that orders have been received from Standard Oil Company of New Jersey for the manufacture and installation of four new Strowger Automatic private telephone exchanges for the Creole and Mene Grande Oil companies, to provide modern automatic telephone facilities over an area of several thousand square miles of oil producing country in Venezuela.

Upon its completion, this network, including two Strowger exchanges already in service, will be one of the largest and most comprehensive of its kind in the world, and will include many special engineering features to meet the complex requirements imposed by the geographic and traffic conditions of the area to be served, which extends over a distance of about 270 miles.

The equipment to be provided includes new Strowger Automatic switchboards for the exchanges at Caripito, Quiriquire, Jusepin, and Anaco, and these are to supplement the two existing Strowger exchanges at Puerto La Cruz and San Tome. The new installations will range in size up to 400 lines each.

Because of their geographic distribution over a wide area, the six exchanges are connected in tandem by long distance lines ranging up to 112 miles in length, and will be provided with facilities for dialing on either physical or composited circuits.

All service throughout the network, both local and long distance, will be full automatic, and will be based on the use of a universal five-digit numbering scheme, to permit a user to reach any station in the network by dialing the same directory number regardless of the point at which the call originates. However, to provide maximum speed, a call local to any exchange can be made by dialing only the final three digits of the universal call number.

To facilitate this type of service over the tandem network, Strowger "Directors" will be introduced in five of the exchanges to provide the necessary digit translation facilities for routing calls over the common groups of trunks connecting the exchanges. The "Directors" will also serve to permit completion of any local call even though the user dials the full five-digit number instead of only the three local digits.

The services to be provided in each exchange will consist of individual and two-party service, service to groups of stations having the same directory number, and service to long "field lines" having up to ten stations per line with automatic code signaling. There will also be provisions on designated stations to restrict service from such stations to local numbers or to a limited number of other exchanges.

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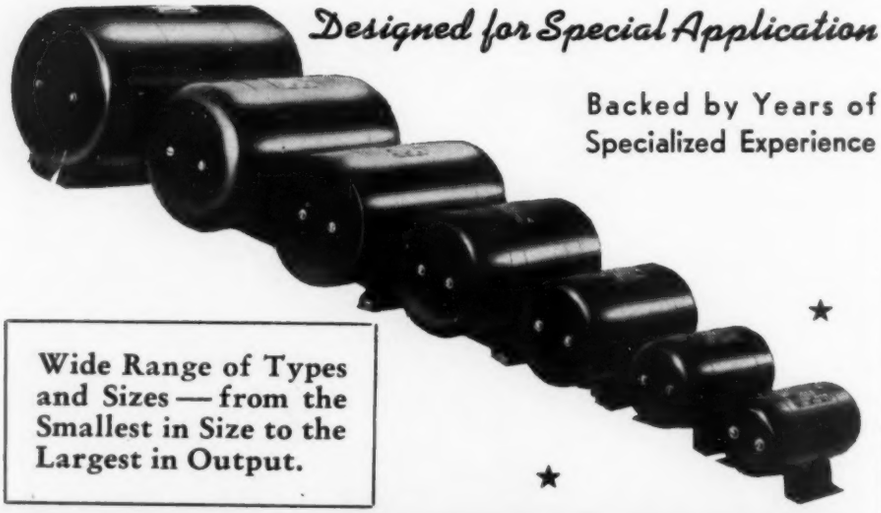

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Suttle Begins Postwar Plan of Expansion

The Suttle Equipment Company, Lawrenceville, Illinois, began its postwar expansion program recently by breaking ground for a new building, it was revealed by Wm C. Strehl, sales manager. Cost of the new structure and other additions to the plant to be built on the present site was estimated at $40,000. The present building is to be extensively altered at the same time.

The new unit will be one story, and will provide about 13,000 feet of additional floor space. Together with other smaller buildings planned, it will give Suttle a total floor space well over 50,000 square feet, according to the announcement.

Schauer Machine Honored

A. J. Kohn

Third renewal of the Army-Navy award for production excellence to the Schauer Machine Company, Cincinnati, Ohio, has just been announced by A. J. Kohn, president of the company.

This marks the fourth time that the Schauer Company has been thus honored. The original award was made in October, 1942, when the Schauer Company was among the first ten in the Southern Ohio district to receive it. The third renewal was one of the final acts of Under Secretary of War Patterson, prior to his elevation to Secretary of War by President Truman.

Before Senate Subcommittee

Secretary of the Minnesota Telephone Association, J. C. Crowley, Jr., made an excellent impression on the Minimum Wage Subcommittee in opposing the boost to a sixty cents an hour minimum wage and he asked for the exception to be increased to one thousand stations. The testimony on October 9 lasted more than an hour and was the longest presentation by any spokesman for the Independent industry before a Senate body.

While the questioning by the Senators on the Minimum Wage Subcommittee indicated a favorable attitude, Mr. Crowley and Clyde S. Bailey, USITA executive vice president, who because of the shortness of time of the hearings had to file his statement without testimony, pointed out that if the higher minimum wage is approved by Congress, the Independent companies would have to curtail services, possibly cut out night and Sunday service in smaller exchanges; employment opportunities would be reduced with a greatly accelerated dial conversion; or Independent companies would have to seek a nationwide subscriber rate increase of 25 or 30 per cent. Mr. Bailey pointed out that OPA is fighting rate increases by telephone companies.

Raise in Rates Granted

The Upham (N.D.) Telephone and Electric Company has received its state public service commission's authority to raise its telephone rates.

The commission held that the Upham company had furnished good telephone service to 155 to 230 subscribers in the area for 15 years, and that present rates do not yield sufficient revenue to provide "reasonable salaries to the operating force and continue to maintain the property in efficient operating condition."

The new schedule calls for increased rates for rural subscribers and for town-residence party lines.

Appoints Administrator

Appointment of Acting District Attorney Archie Lape of Montour Falls (N.Y.) as temporary administrator of the Watkins Glen (N.Y.) Reading Tel. Co. became necessary when the owner of the one-man company, Cpl. Harold Andrews, disappeared from this section. The company of 80 or more subscribers runs through the rural sections of Reading, Upper Dix and Rock Stream. Harvey Berry, one-time owner of the rural communications lines, will be maintenance superintendent.

Purchase Exchange

Recently, Mr. & Mrs. Marion Hooker purchased the Brookpark (Minn.) Telephone Company. The building is being remodeled, a telephone booth put in and plans are going ahead for many other changes.

Sells Exchange

A deal was tentatively closed for the sale of the Auxvasse (Mo.) Telephone Exchange, it was announced recently by E. O. Turner, owner of the property. With the final approval of the state public service commission, the formal transfer of the ownership and management was to occur on October 1. Mr. Turner was not at liberty to divulge the purchaser's name at that time.

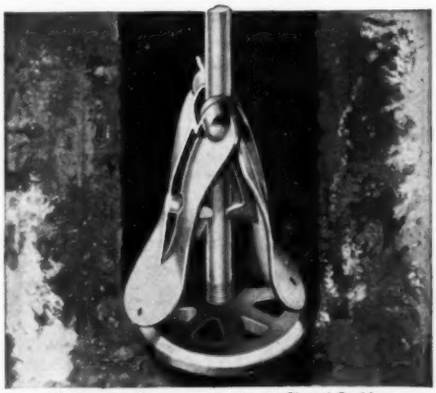
New Cable Laid

The Shepard Telephone Company, Walhalla (N.D.), laid new underground cable from its office to a building across the alley. The new cable will replace some of the overhead system. Plans are being made to replace other poles in the business district.

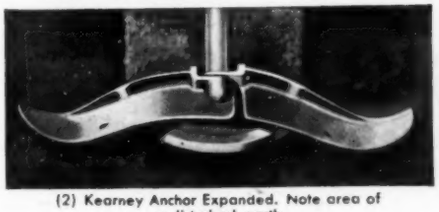
Reduce Costly Risks of Guying Failures

INSTALL KEARNEY 2-WAY

EXPANSION ANCHORS



(1) Kearney Expansion Anchor in Closed Position.



(2) Kearney Anchor Expanded. Note area of undisturbed earth.

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WANTED: Man thoroughly experienced in magneto telephone work; also cableman. Permanent employment. Write, Community Telephone Company of Wisconsin, Black River Falls, Wisconsin.

WANTED: Telephone traffic supervisor—permanent—for growing Independent Company operating exchanges with over 50,000 stations. Include information relative to education, experience, age, number of dependents and attach picture of yourself. (Will return). Write Box 8404, c/o TELEPHONE ENGINEER.

HELP WANTED: Operator, for quick promotion to Chief Operator (now open). Thoroughly experienced in standard toll practice—for Black Hills town of 2,000. 400 telephones—center-check 11 towns—must be neat, courteous, efficient, fully capable of instructing and supervising others. Clerical ability. Age preferred, 25-35. Good wages, Magneto exchange, planniing conversion to common battery. State experience and employers in 1st letter in writing. Custer County Telephone Co., Custer, So. Dak.

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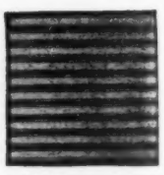

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WANTED: Telephone Accountant—qualified to supervise all phases of telephone accounting for Class A companies. Give full information as to age, experience, draft status, etc. Attach small photograph. Telephone Services Inc., 16th Floor Lincoln Tower, Fort Wayne, Indiana.

WANTED: Wire chief capable of taking care of common battery switchboard with 2100 subscribers. Also want trouble man capable of taking care of the above common battery telephones. Reply Box 8407, c/o TELEPHONE ENGINEER.

WANTED: Assistant to General Manager for large telephone property. Must have executive ability and administrative experience. In application furnish information as to age, education, experience, present employment, draft status, small photograph, recommendations, etc. Write Box 8386, c/o TELEPHONE ENGINEER.

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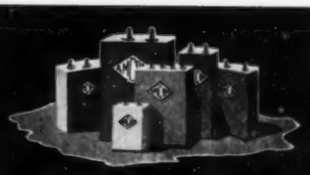

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WANTED: Plant Superintendent for large telephone property. Good salary for man having qualifications. In replying, furnish complete information as to age, education, experience, present employment, draft status, small photograph, recommendations, etc. Write Telephone Services, Inc., 16th Floor, Lincoln Tower, Fort Wayne 2, Ind.

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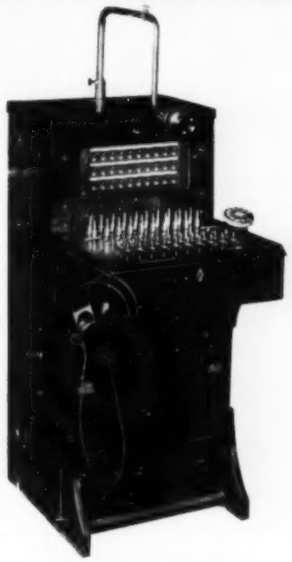

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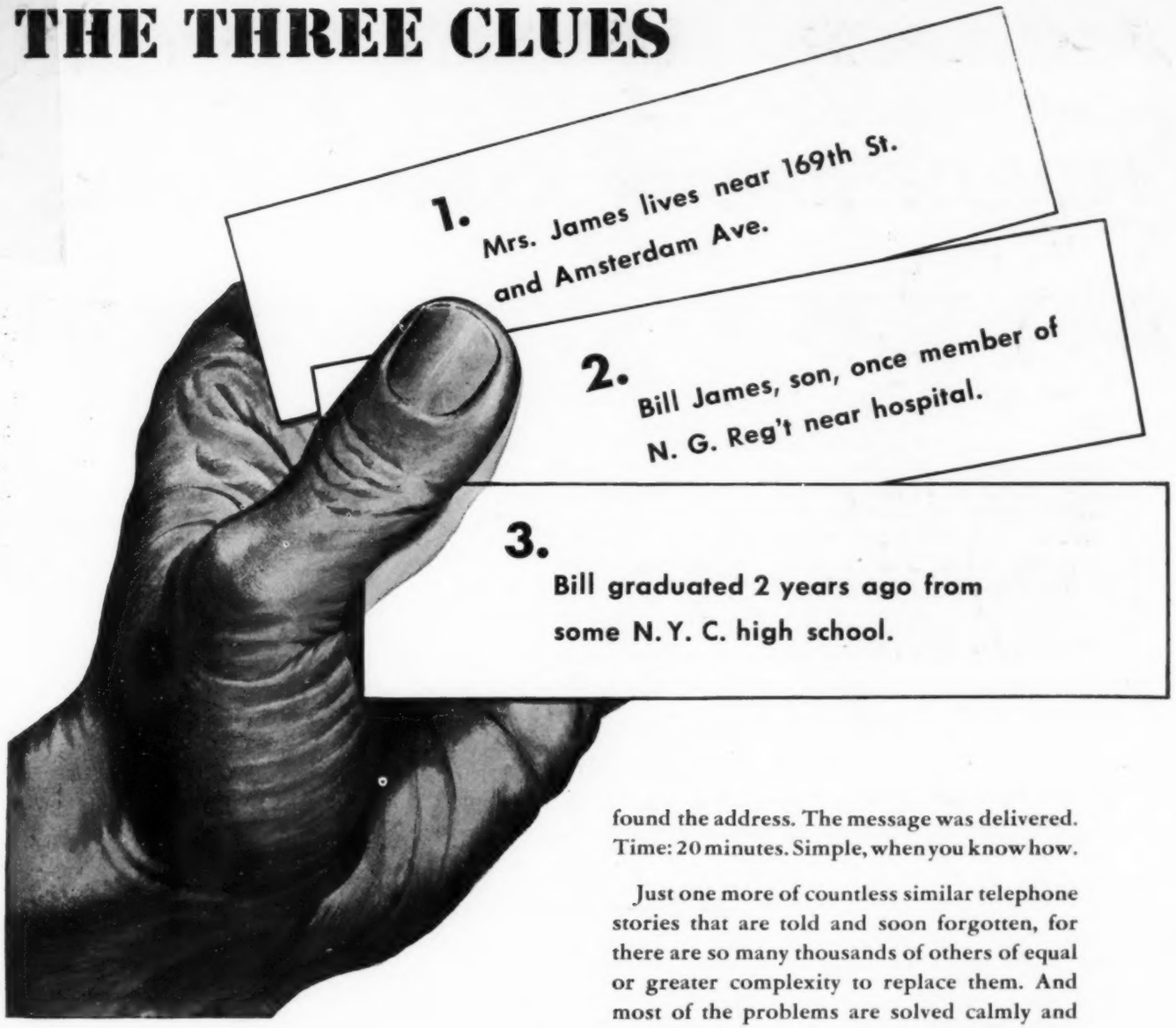

Problem: find Mrs. James and give her a message from Bill, still overseas. Find one lonely mother in a city of seven and a half-million people—a human needle in an animated haystack. That was the job of a newly discharged veteran who had lost Bill's address. Being too complicated for him he turned the problem over to the telephone company.

Two calls to the only James families near 169th and Amsterdam were reported "wrong numbers." A call to National Guard Headquarters identified the 22nd Regiment armory, but no one there knew where Bill's mother lived. The Board of Education, next contacted, found the address. The message was delivered. Time: 20 minutes. Simple, when you know how.

Just one more of countless similar telephone stories that are told and soon forgotten, for there are so many thousands of others of equal or greater complexity to replace them. And most of the problems are solved calmly and competently in conformance with the telephone tradition of faithfulness and dependability.

In Exide Batteries you will find the same dependability for which telephone service is famous throughout the world. Since 1895, Exides have been proving themselves worthy of that trust.

Exide
TELEPHONE BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32

Exide Batteries of Canada, Limited, Toronto

NORTH REPAIR CLERKS' DESKS

NORTH Repair Clerks' Desks are designed to serve various functions. These include:

Answering of repair service calls from the Local Exchange or Tributary Offices.
Overlapping of calls where desired.
Extension of calls to the Wire Chief's Desk or Chief Operator's Desk.
Verification of local subscribers' lines.
Two-way Wire Chief or Chief Operator's trunk to the Repair Clerk's Desk.
One-way local lines for outward calls.

These desks are usually used in conjunction with a card file tub for filing subscribers' line record cards. Tubs can be made to fit your requirements as they are equipped with removable trays, each tray holding approximately 1500 cards.

These are some of the features to be found in North Repair Clerks' Desks. Your requirements may necessitate additional features. Whatever these needs may be, the desired service will be provided in the desk designed for use in your exchange.

NORTH REPAIR CLERK'S DESK

THE NORTH ELECTRIC MFG. COMPANY

Galion, Ohio

"ALL-RELAY" DIAL AUTOMATIC EQUIPMENT

Central Offices, 10 lines to 10,000 lines • Telephone Instruments • Automatic Toll Boards • Manual Toll Boards • PABX Attendantless • PABX Attendant • Toll Termination Equipment • Service Observation Equipment • Battery Chargers • Battery Racks • Power Boards • Main Distributing Frames • Chief Operators' Desks • Information Desks • Repair Clerks' Desks • Toll Test Panels • Wire Chiefs' Desks and Panels • Special Services Equipment